OHIO STATE UNIV
OCT
LIBR
D66
.38

DOMESTIC ENGINEERING

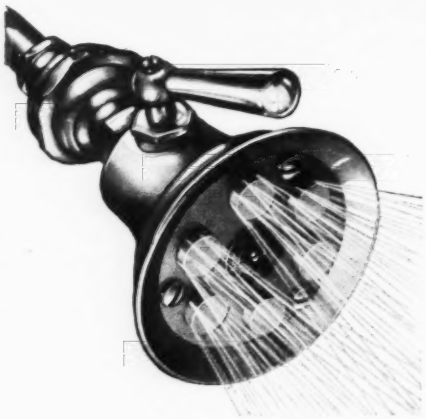
PLUMBING & HEATING CONTRACTING AND MERCHANDISING

Announcing

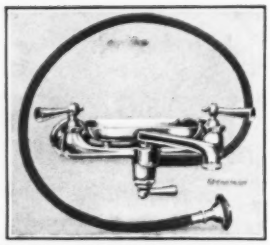
For readers of Domestic Engineering in this and coming issues, a special editorial service for the many who want to learn of the profits and problems ahead of the AUTOMATIC HEAT *and* AIR CONDITIONING DEALER

—Page 81

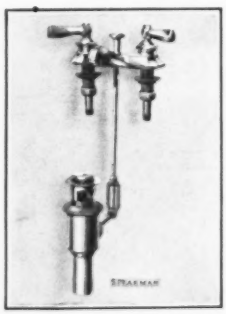
OCTOBER, 1932



K-3395—SPEAKMAN Anystream Self-Cleaning Shower Head. Pat. Jan. 2, 1923 & Nov. 3, 1931.

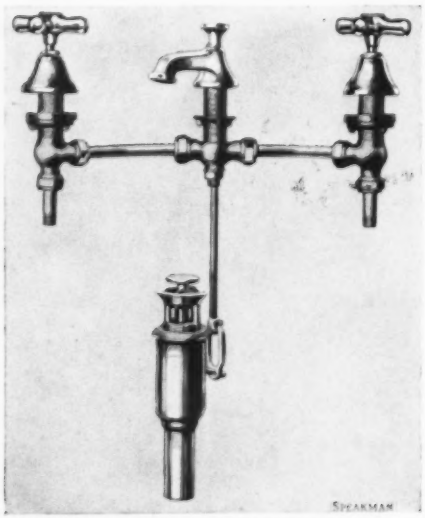


K-5504-M—SPEAKMAN Grace-Line Sink Fixture, with hose and spray head.



K-5057 — SPEAKMAN Center-Set lavatory fixture which gives extra shelf space on lavatory. Inlets 4 in. centers. A variety of lavatories are now punched to suit these fixtures.

K-4656—SPEAKMAN Act-Easy Pop-up Bath Waste.



K-5010—SPEAKMAN Metaline Unit-Acta Lavatory Fixture.

WHEN YOUR CUSTOMERS ARE READY TO BUY, WHY NOT SELL THEM FIXTURES ON WHICH YOU MAKE A PROFIT? . . . .

YOU are entitled to a good profit on what you sell as well as on your labor, and you know as well as we that there is no profit in handling cheap plumbing. Usually there is a lot of grief for you and eventually dissatisfaction for your customer.

Bear this in mind when you are talking over the next installation of any kind of plumbing fixtures. Point out that Speakman Showers and Fixtures are made of good heavy brass; that seats are easily renewable and that washers are on swivel discs which are encased. This, as you know, reduces wear on both seat and washer, because the washer ceases to rotate instantly when it comes in contact with the seat.

Stress also the fine finish of Speakman Showers and Fixtures—sparkling, non-tarnishing Chromium plate, which is applied in a plant designed for us by the Chromium Corporation of America.

Your customer will be impressed by these features and from then on it will not be difficult to sell him quality fixtures instead of fixtures which have only price for appeal.

Literature designed to help you sell Speakman Showers and Fixtures will be sent promptly—imprinted with your name and address.

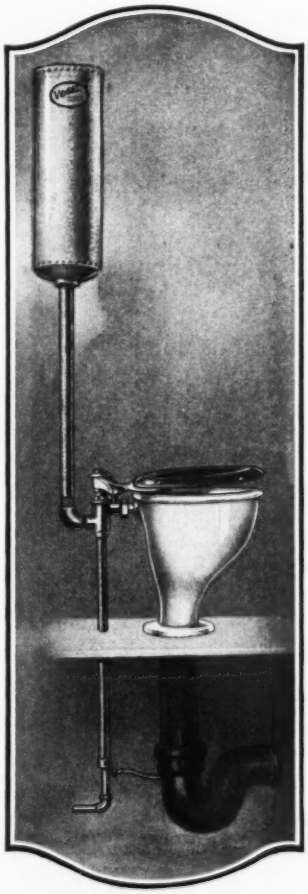
SPEAKMAN COMPANY
Wilmington, Delaware

K-2601-M—SPEAKMAN Built-in Mixometer Shower. Size ½ inch. Mixometer with metal wall plate and metal handle. Bent arm with heavy metal wall flange and K-3395 Anystream Self-Cleaning Head.

SPEAKMAN
SHOWERS & FIXTURES

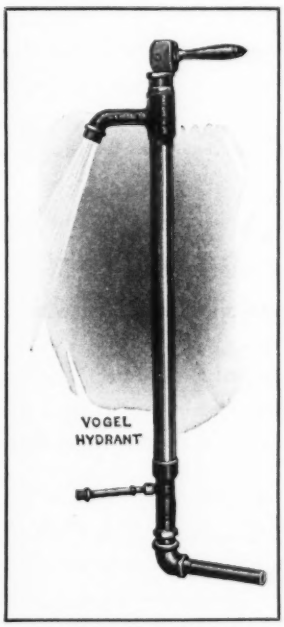
Stir up your prospects

GET after those people who were thinking of installing a Vogel Frost-Proof Closet or Hydrant. Use our literature, imprinted with your name and address. Use the telephone. Remind them that *NOW* is the time to install a Vogel Closet before frost sets in. It won't take much time, but you'll make a lot of sales.



NUMBER ONE VOGEL FROST-PROOF CLOSET

Simple in operation. Sturdy in construction. Half a million in operation.



VOGEL FROST-PROOF HYDRANT

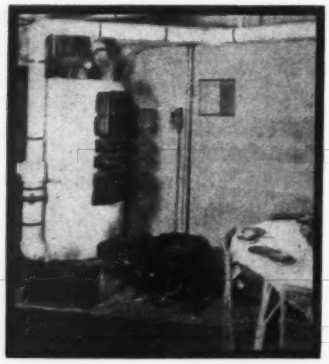
Stir up those prospects! And remember, when you install a Vogel Frost-Proof Closet or Hydrant you make

- *A profit on the sale*
- *A profit on the installation*
- *A profit in satisfied customers*

JOSEPH A. VOGEL CO.
WILMINGTON, DEL.
ST. LOUIS, MO.

VOGEL PATENTED

Frost-Proof Products



DOMESTIC ENGINEERING

Plumbing & Heating Contracting & Merchandising

Established 1889

Vol. 140, No. 5 October, 1932 Whole No. 1975

Published Monthly by
Engineering Publications, Inc.
1900 Prairie Avenue, Chicago

F. P. KEENEY,
President and Treasurer

E. DE FOREST WINSLOW
Vice President

O. T. CARSON
Secretary

EDITORIAL STAFF
R. V. Sawhill, *Editor*
R. Herlov, Chas. E. Price,
L. W. Britton,
Wm. W. Gothard,
Associate Editors
R. M. Starbuck, Jr.,
Consulting Editor on Plumbing

ADVERTISING REPRESENTATIVES
E. G. Hutchison,
R. Payne Wettstein,
Wallace J. Osborn, H. J. Carr,
D. M. Kenney, Robert A. Jack,
A. T. Papineau, I. W. Hoff

BRANCH OFFICES
NEW YORK—
Rooms 1706-1707, 110 East 42nd St.
PITTSBURGH—
Room 604, Chamber of Commerce Bldg.

TERMS OF SUBSCRIPTION
Anywhere in the World, except Canada, $2.00 per year. Canada $3.00 per year
Current copies, 25c each
Back numbers, 50c each

Entered as Second Class Matter on September 26, 1932, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Copyright 1932, by Engineering Publications, Inc.

Member of Audit Bureau of Circulations

IN THIS ISSUE

Page

How Home Loan Bank System Will Help Home Building .. 34
How to Estimate and Size Pipes for Domestic Water Demands. By Harold L. Alt 36
How a Heating Contractor Co-operates with Coal Dealers. By C. B. Dawson 40
Office Methods Designed for Efficiency. By Wm. W. Stevens 43
Trouble Job Results from Radiator Trap Hook-Up. By Earl Brown 45
Plumbing Installation at Duke University. By S. M. Barr ... 50
The Reason for the New Lead Pipe Size Standards. By F. E. Wormser 62
The Strength of Numbers and Achievement. By E. B. Kleine . 137

AUTOMATIC HEAT AND AIR CONDITIONING DEALER SECTION

Even Temperature and Humidity with Oil Fired Air Conditioning Job 83
Two Comfort Control Problems. By A. J. Parks 87
Hand Firing versus the Stoker. By T. R. Shaver 93
New Developments in Products for the Dealer 99

SPECIAL DEPARTMENTS

Editor's Page 30
Our Industry 33
Retail Advertising Service 48
Items for Store, Shop and Job 53
Questions and Answers 68
Supply News 113
The Trade 128
New Trade Literature 147
New Contractors and Incorporations 150
Woman's Page 152
Epigrams 155
Plumbing and Heating Patents 157
Index to Advertisers 162

It Takes Good Wrought Iron to Thread Like That!

P.S. It's BYERS . .

The material from which pipe is made has much to do with threading qualities. Byers Genuine Wrought Iron is carefully manufactured to retain the purity of metal and quality of slag that have always been responsible for the long life of genuine wrought iron. Byers Wrought Iron is as free from laminations, blisters and hard spots as careful workmanship and fine materials can make it.

You can tell this finest wrought iron easily. Every length of Byers Pipe is marked with the red spiral stripe and the name "Byers." These markings are your assurance that this pipe has been rigidly tested and minutely inspected before it comes to you.

For complete, authoritative information on how to obtain best threading results, send for your copy of "Pipe Threading" Bulletin 52. For any information you may wish on welding write to our Engineering Service Department. A request will also bring a copy of "Pipe Bending" Bulletin 50, complete information on Byers Special Bending Pipe—the only special bending pipe of genuine wrought iron. A. M. Byers Company, Pittsburgh, Pa. Established 1864.

You'll like Byers Jobbers — good stocks, quick deliveries, dependable service.

For a Better Piping Job . . . Use Byers Wrought Iron Nipples

Byers Genuine Wrought Iron Nipples strengthen the weakest part of the piping system. Long and short nipples are marked with the word Byers. Close nipples are marked with a red band around the center. Made from new, tested, full weight genuine wrought iron, uniformly threaded by precision machinery, minutely inspected. Send for Byers Nipple Folder giving sizes and weights.

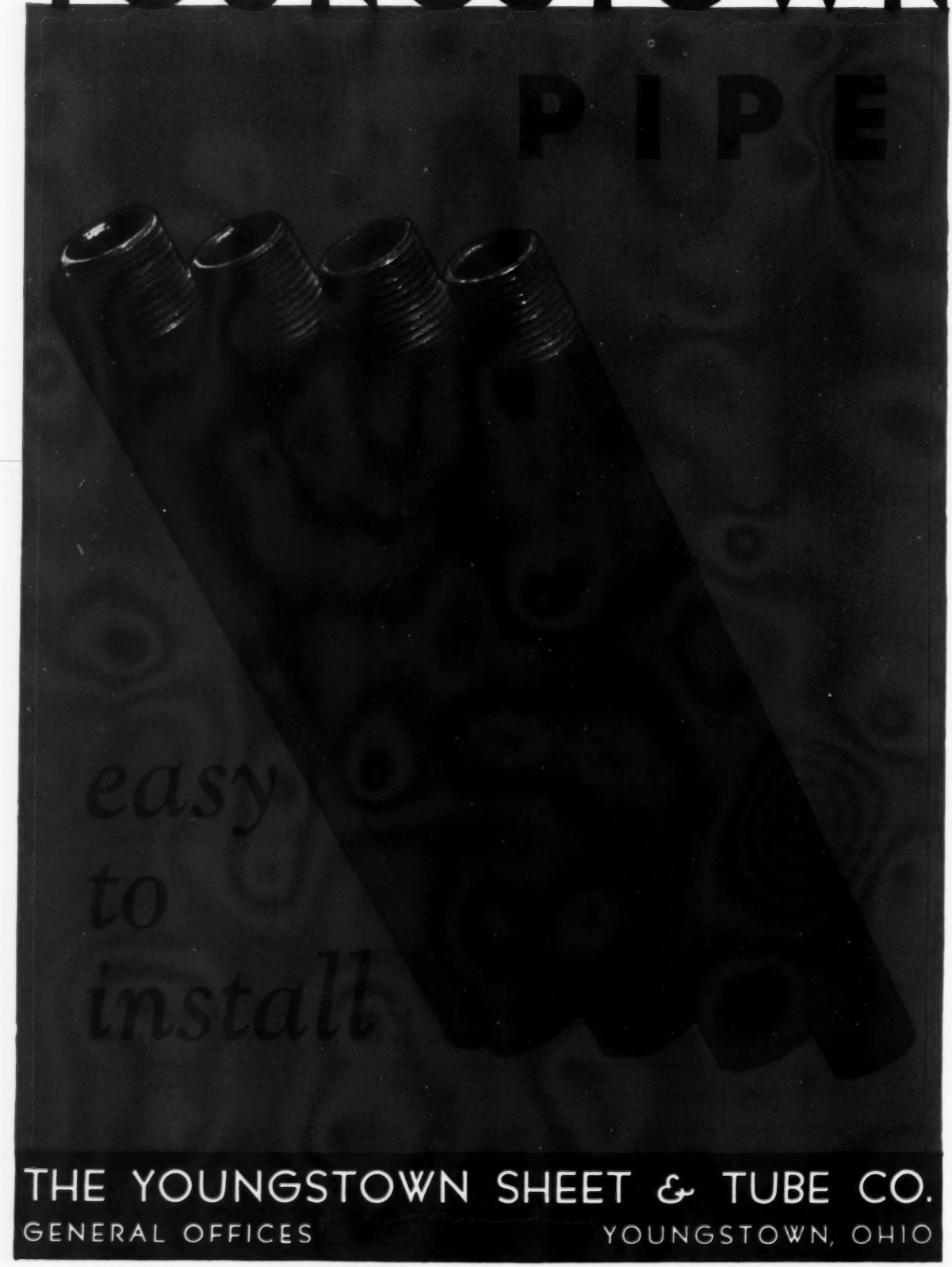
BYERS GENUINE WROUGHT IRON PRODUCTS

PIPE · CASING · COUPLINGS · NIPPLES · WELDING FITTINGS · BLOOMS · RIVETS
SPECIAL BENDING PIPE · BAR IRON · TUBING · PLATES · SHEETS · BILLETS · STRUCTURALS

STANDARD of QUALITY for 68 YEARS · TODAY BETTER THAN EVER

MAIN LIBRARY

YOUNGSTOWN



THE YOUNGSTOWN SHEET & TUBE CO.
GENERAL OFFICES YOUNGSTOWN, OHIO

Announcing

A PLUMBING CONTRACTOR SELLING POLICY *40 years old*

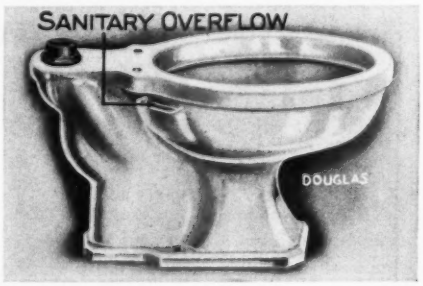
With the inception of The John Douglas Company forty years ago, the founders conceived a plumbing contractor selling policy, *from The John Douglas Company direct to the plumbing contractor*, which has been followed unflinchingly down through these forty years. This policy was looked upon at the time of its adoption as the ideal upon which the plumbing contractor and The John Douglas Company would prosper mutually.

How well that policy has borne profitable results to the plumbing contractor and The John Douglas Company, is attested to by the renewal of this announcement to the plumbing fraternity of the United States.

Particularly at this time of disturbed selling policy the plumbing contractor should see the advantage of selecting and handling a line of plumbing fixtures which carries no fixed published price to the consumer and a line on which he alone makes the selling price to his customer.

The John Douglas Company policy of recognizing the master plumber as the logical distributor of products of their manufacture, remains constant and will be positively adhered to as The John Douglas Company embark on another period of years of service to the plumbing contractor.

The John Douglas Company have enjoyed a national reputation as specialists on government work for thirty years, and maintains a Washington, D. C., office for your service.

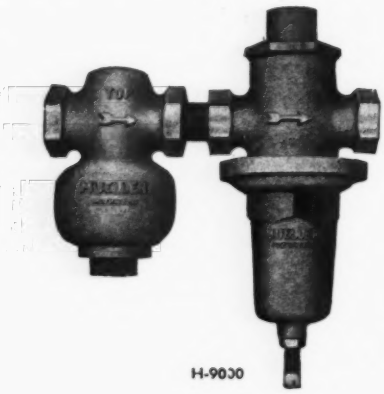


THE DOUGLAS BOWL
with Sanitary Overflow
Positively eliminates back syphonage. Affords less objectionable overflow occurrence than the normal overflow

THE JOHN DOUGLAS COMPANY
CINCINNATI » OHIO

MUELLER

TRADE MARK REG. U. S. PAT. OFF.



H-9000

Protection Assured With This Mueller Pressure Regulator

This one fitting will perhaps do more for the success of a plumbing installation than anything else you could recommend. It prevents water waste by controlling flow, eliminates water hammer by reducing the pressure, stops the annoyance of faucet splashing while assuring full volume at fixtures, prolongs the life of the entire system and minimizes repairs. The MUELLER H-9000 Pressure Regulator can be depended upon for positive control and safe operation. Write for complete details *today*.

Life and Property Made Safer With Mueller Relief Valves

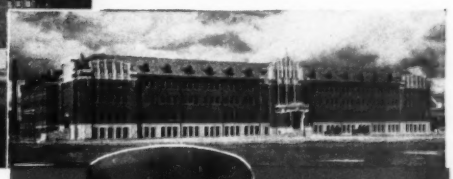
MUELLER H-9045 is especially designed to relieve dangerous and excessive pressures. While it is particularly adapted to hot or cold water installations, it works equally well with air or oil. This MUELLER valve is diaphragm-operated and of all-bronze construction. Diaphragms are made of phosphor bronze material with a diaphragm area thirty-five times its seat area to assure sensitive operation. Write us for full information on this MUELLER Relief Valve.

H-9045

MUELLER CO., Decatur, Illinois

IT TAKES MORE THAN ARCHITECTURAL BEAUTY TO MAKE A BUILDING

At left, Academy Building and, below, Mother House of the St. Mary's College and Academy, Monroe, Michigan. J&L Steel Pipe is installed in these buildings. Architects: D. A. Bohlen & Son. General Contractor: W. E. Wood Co. Plumbing Contractor: Davis Brothers, Inc.



BEHIND the architectural beauty of every building are the materials and equipment that make it a place of utility. Important, then, is the specification of pipe of the highest quality—J&L Steel Pipe—as well as other materials of the best for use in the buildings you design. J&L Steel Pipe is giving satisfactory, trouble-free service in hundreds of buildings of all types from coast to coast. The name "Jones & Laughlin," rolled into every length of J&L Steel Pipe, is always a symbol of unvarying excellence—a guarantee of satisfaction.

Specify J&L Steel Pipe for your next project. Where piping is to be exposed to alternate wet and dry conditions specify J&L Copper Steel Pipe, which provides increased resistance to rust at minimum extra cost.

J&L PIPE

J&L STEEL IS INSTALLED in hundreds of buildings situated in cities throughout the entire country. If you would like to see J&L Steel Pipe in actual use in your territory, write us and we will supply a list of installations for you to inspect. There is no obligation.

J&L STEEL

JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

Sales Offices: Atlanta Boston Buffalo Chicago Cincinnati Cleveland Dallas Detroit Erie Los Angeles Memphis Milwaukee New Orleans New York Philadelphia Pittsburgh St. Louis San Francisco

Warehouses: CHICAGO CINCINNATI DETROIT MEMPHIS NEW ORLEANS PITTSBURGH

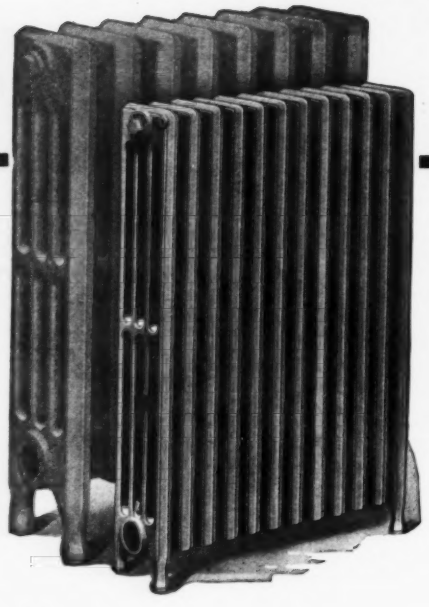
Canadian Representatives: JONES & LAUGHLIN STEEL PRODUCTS COMPANY, Pittsburgh, Pa., U. S. A., and Toronto, Ont., Canada

J&L STEEL CONSTRUCTION PRODUCTS

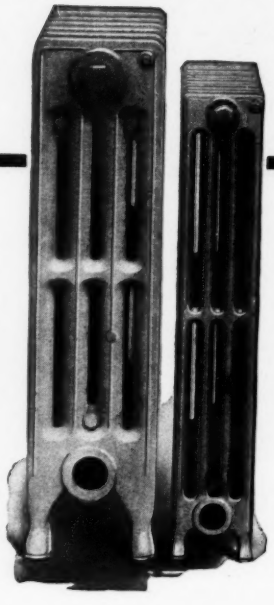
LIGHT WEIGHT ROLLED CHANNELS JUNIOR BEAMS STEEL PIPE

STANDARD STRUCTURAL SHAPES STEEL PILING BARS FOR CONCRETE REINFORCEMENT

FABRICATED STRUCTURAL WORK including Steel Plate Construction



Two views showing how the new Burnham Radiator is decidedly *narrower, lower and shorter* than a conventional radiator of same capacity. The Burnham 3-Tube is only 3¼ in. wide, the 4-Tube is only 4¼ in. wide. Bottom Tapping, 1¼ in., Top 1 in.



Would You Put a 1925 Style Body on a Modern 1933 Auto Chassis?

OF COURSE you wouldn't. You want the newest and best of *everything* on a new car.

For the same reason, the progressive contractor will no longer put old style conventional radiators on modern heating systems.

Why? Because the new Burnham Radiator is decidedly narrower, lower and shorter than a conventional radiator *of the same rating, and takes ⅓ less space.*

The new Burnham is designed for use either exposed or concealed, on steam, vapor or hot water systems. It has smart trim lines. Actually occupies less space than most finned-type radiators. As a wall radiator it needs less space, is much lighter to handle, and costs less.

Above all, the new Burnham is made of Cast Iron—THE METAL ETERNAL—and will last indefinitely. Your customers' good will will likewise last indefinitely if you depend on Burnham.

Burnham Boiler Corporation

Irvington, New York

Branch Offices in all Principal Cities of the United States and Canada

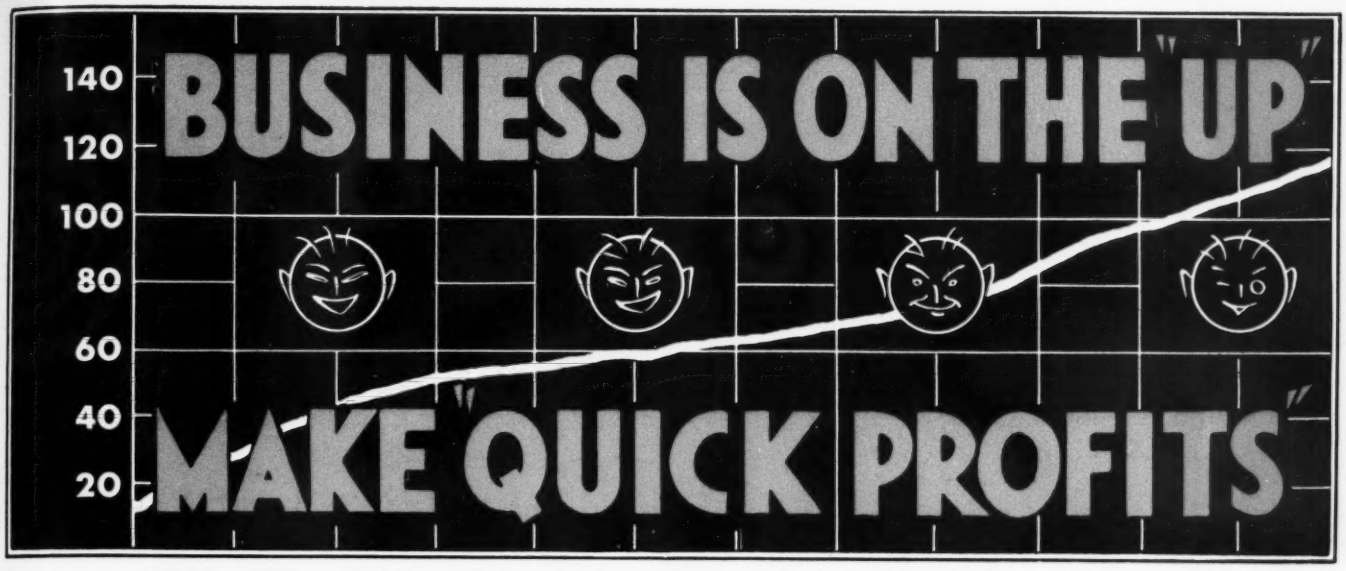
SEND COUPON FOR CATALOG

Burnham Boiler Corp.
Irvington, New York

Send me information on new Burnham Radiator, as advertised in Domestic Engineering.

.....**name**

.....**address**

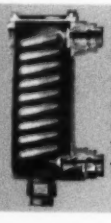


with EXCELSO *now!*

These are the HARVEST Days. Business is up. Spirits are up. Excelso Sales—all along the line—are up. **Your** PROFITS will go up with Excelso because **"it sells so".**

Direct and Indirect Heaters for all types of buildings, for installation with steam, vapor or hot water boilers and warm air furnaces.

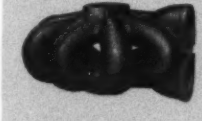
HERE'S THE EXCELSO LINE "BUILT FOR PROFIT"



Excelso Indirect Heaters

Single, Double, Triple and Dual Coil Heaters. 30 to 2500 Gallons Capacity. Deliver Hot Water to 1 or 100 Families. Sell Because They Save.

Excelso Phaeton Water Heaters



Made in Six Sizes for Domestic Hot Water Supply. Installed Above the Fire in Warm Air Furnaces or Hot Water Heating Boilers. Particularly satisfactory for Heating Auxiliary Radiation.

Excelso Fire Pot Generators

Furnish Domestic Hot Water Supply in Connection with Warm Air Furnaces and Hot Water Heating Boilers. Installed Above the Fire, so Does Not Interfere with Combustion or Care of Fire.

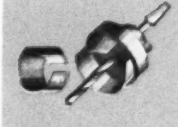
Excelso Fin Pin Water Heaters

These Low-Priced and Efficient Down-in-the-Fire Heating Units are Especially Designed for Soft Coal Fired Furnaces or Hot Water Heating Boilers. The Fins Allow Circulation of Air. Preventing Deadening of Fire Around Heater.

Excelso Klearway Valves

Insure an Efficient and Clean Domestic Hot Water Heating Installation. Positively, Safely and Easily Removes Rust and Sediment. A Fast and Sure Seller.

Excelso Rotary Hack Saw Tools



Cuts 1, 1¼, 1½ and 2 inch Pipe Tap Size Holes Thru Metal or Other Material. Each Tool Equipped with Two Blades of Each Size.

FOR COMPLETE INFORMATION ON THE EXCELSO LINE SEND THE COUPON NOW!

EXCELSO INDIRECT WATER HEATERS

EXCELSO PRODUCTS CORP.,
57 Clyde Avenue, Buffalo, N. Y.

Please send us detailed information on the items in the Excelso line checked below.

Indirect Heaters — Phaeton Water Heaters — Fire Pot Generators
Klearway Valves — Rotary Hack Saw Tools — Fin Pin Water Heaters

NAME .....

ADDRESS .....

CITY ..... STATE .....

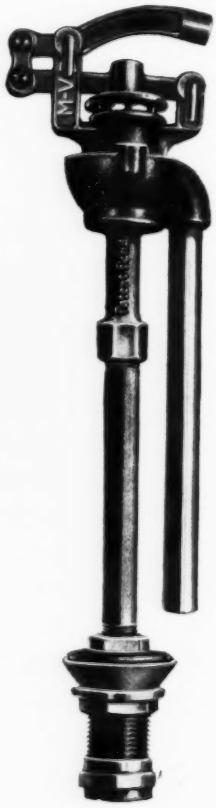
OUR JOBBER IS .....

This better ballcock costs no more!

USE the new M-VB No. 6-A Ballcock—and you give your customer a *better* job at *no increase* in price. If you have been using the No. 6 type ballcock on your standard-tank work, try this improved model. It is quieter in operation, fills nearly as fast, and has power for a perfect shut-off. Yet the cost of the new No. 6-A is the same as the old No. 6.

You can always count on getting the right M-VB Ballcock for every job, no matter what the requirements may be. Prices are low enough to meet competition. A wide variety of models is available for special connections, for unusual water pressures, for adverse conditions of line precipitation. And each M-VB Ballcock may be had distinctively packaged, clearly labeled, for a slight extra charge—to save you time, trouble, and stockroom space.

M-VB NO. 6-A BALLCOCK

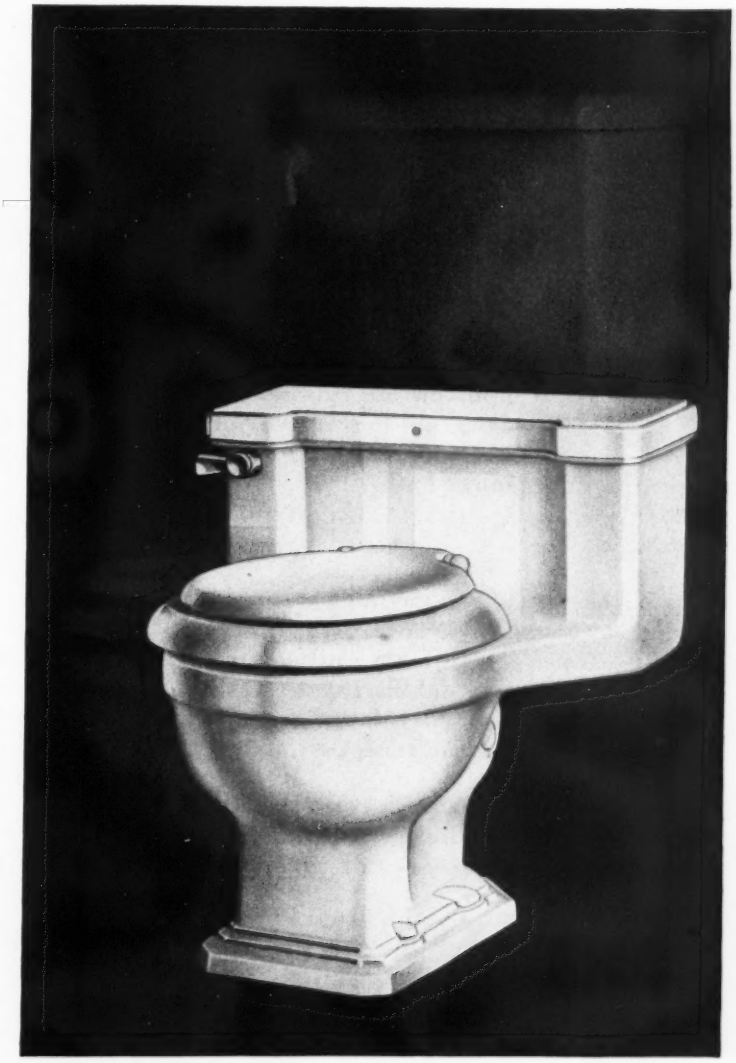


The entire line of M-VB closet tank fittings is made to meet practical plumbing needs. Every item features carefully tested materials, excellent design, and sturdy, lasting construction. Let your jobber give you the facts and figures about M-VB fittings, or write direct to us for a catalog. Just address:

MORENCY-VAN BUREN DIVISION
Scovill Manufacturing Company
STURGIS MICHIGAN

A COMPLETE LINE OF CLOSET TANK FITTINGS

Different—
the New Quiet "Standard" One-Piece Closet



Actual photograph of "Standard" One-Piece Closet and regular closet, graphically comparing height.

Even a photograph can not do justice to the different appearance and compactness of the "Standard" One-Piece Closet. Only when seen side by side with a regular closet can its different features be appreciated.

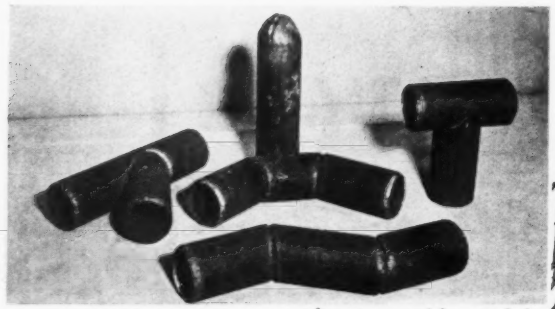
The illustration shows the "Standard" One-Piece Closet photographed in the same position as a regular closet. Note the difference in size—the "Standard" One-Piece Closet is actually one-third lower, making it a more compact and attractive bathroom fixture.

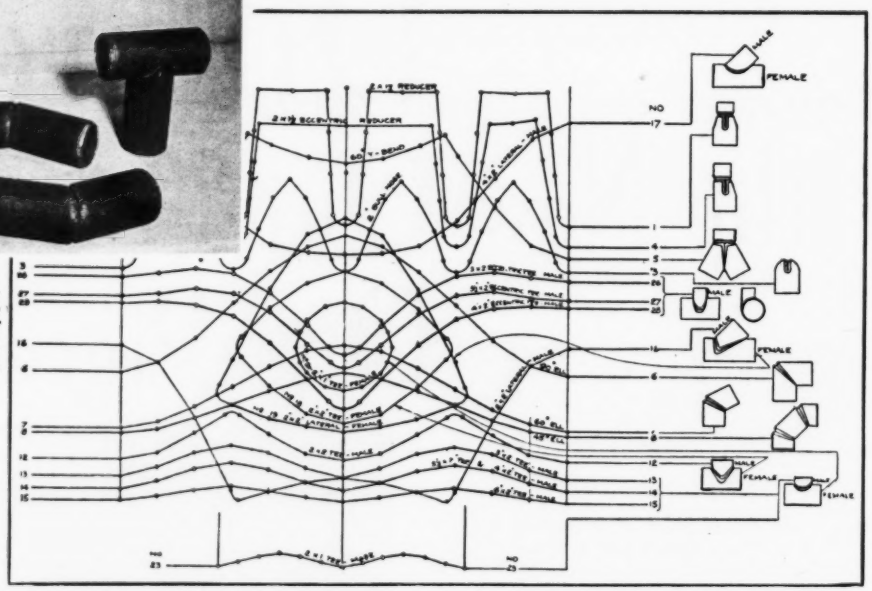
Add to these features its quiet operation, its one-piece construction and improved design—and the reasons for its popularity are complete.

See it in "Standard" Showrooms

Patent Applied for.

Standard Sanitary Mfg. Co.
PITTSBURGH, PA.
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION





Examples of the compact, durable fittings that can be made on the job with the aid of AIRCO Templets and an AIRCO Pipe Welding Outfit with Cutting attachment.

Write for this chart of Templets for making 2″ welded fittings

The widespread turn to welded piping has placed on the market a great variety of welding fittings. However, a compact, durable fitting, as strong as the pipe itself, can be fabricated on the job.

With the aid of AIRCO Templets, such as are shown above, any journeyman welder can quickly and accurately make all the usual fittings,—in most cases from short ends of pipe that would otherwise be scrapped!

AIRCO Engineers have worked out templets for the making of many different fittings in all sizes of pipe from 2″ to 16″ inclusive. Ordinarily, these templets are given only to users of AIRCO Welding and Cutting Equipment and Supplies, as part of AIRCO Service.

For a limited time, an exception is being made in the case of the chart shown, which contains templets for making 12 different fittings from 2″ pipe. A full size copy of this chart, with complete instructions, will be sent free to any Plumbing and Heating Contractor who requests it. Get a copy and see how easily you can make fittings with these templets to guide you.

For your copy, write to the nearest office listed below.

AIR REDUCTION SALES CO.

Lincoln Building, 60 East 42nd St., New York

A Nation-Wide Welding Supply Service—Distributing Stations in All Principal Cities

DISTRICT OFFICES

Baltimore	Buffalo	Cleveland	Kansas City, Mo.	Minneapolis	Pittsburgh	Seattle
Bettendorf, Ia.	Charlotte	Dayton	Los Angeles	New Orleans	Portland, Ore.	Shreveport, La.
Birmingham	Chicago	Detroit	Louisville	Oklahoma City	Richmond	St. Louis
Boston	Cincinnati	Jersey City	Milwaukee	Philadelphia	San Francisco	Wheeling

Represented in Texas by Magnolia Airco Gas Products Co.
Houston, Beaumont, Wichita Falls, El Paso, Fort Worth and San Antonio

STRONGER

Square "Gee" Trus-Construction *reinforces* at the point of greatest strain!

POSSESSED of a capacity for excess punishment, Square "Gee" pipe fittings are known for "staying power." Extra metal placed at the point where the strain comes insures strength where strength is needed.

What if lines slip from hangers or extra strains occur . . . these are no longer a source of trouble with Square "Gees" on the job. The Grabler exclusive truss construction provides for the extra load . . . the emergency strain. Standardize on fittings that *start* right and *stay* right. Look for the Square "Gee" . . . the recognized mark of dependable uniformity on ten or ten thousand fittings.

THE GRABLER MFG. COMPANY
6565 BROADWAY · CLEVELAND, OHIO
Warehouses: New York, Chicago, Los Angeles, San Francisco

THE SQUARE "GEE" LINE INCLUDES:
Standard and Extra Heavy Malleable Fittings . . . Standard and Ground Joint Unions . . . Rail Fittings . . . Standard Cast Iron Steam Fittings . . . Standard and Patented Cast Iron Drainage Fittings . . . Standard and Extra Heavy Brass Fittings . . . Brass Unions . . . Steel and Brass Nipples . . . Hangers . . . Floor and Ceiling Plates.

YOUR FITTING PROBLEM IS SOLVED WHEN YOU SAY "SQUARE 'GEES'"

SQUARE Pipe G **"GEE" Fittings**

MALLEABLE, CAST IRON DRAINAGE, BRASS

Illustration shows "EverHot" automatic gas water heater, made by the EverHot Heater Company, Detroit, Mich. "EverHot" heaters are equipped with all-welded Everdur tanks.

Priced to sell in volume now... water heaters with rust-proof tanks

WILL RUST troubles sooner or later affect the performance of the automatic water heaters you sell? There is no longer any necessity of this. Today, water heaters made by the majority of leading manufacturers are available with rustless tanks of Everdur (strengthened Copper).

These dependable heaters are not expensive... but sell at prices comparable with those charged for the rustable-tanked unit of only a few years ago.

ANACONDA from mine to consumer

Everdur*, Anaconda Copper alloyed with silicon and manganese, combines corrosion-resistance equal to or better than that of Copper with the strength and welding properties of steel. Manufacturers of tanks have found Everdur *the ideal metal* for the efficient volume production of rust-proof tanks of the welded type. Such tanks are also advantageously used for storing water heated by furnaces, oil burners, stoves, side-arm units, etc.

Anaconda Brass Pipe

A storage tank of Copper or Everdur, connected with Anaconda Brass Pipe, provides a completely rust-proofed hot water system. Public knowledge of such a system's many advantages will stimulate sales of rust-proof tanks and continue to increase the use of Brass Pipe.

*Reg. U. S. Pat. Off.

THE AMERICAN BRASS CO.
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities
ANACONDA AMERICAN BRASS LIMITED
New Toronto, Ontario

Tanks of EVERDUR... an Anaconda Metal

•THRUSH DOMESTIC•
WATER SUPPLY SYSTEMS

A Line of quality valves for Domestic Water Supply

● BUSINESS is better for the firm that is equipped and alert to find it in the homes of customers. While there is little new building, many a home owner is thinking of remodeling and thousands of repossessed homes are being reconditioned in order to make them salable. A suggestion may start the ball rolling your way.

Thrush Domestic Water Supply Systems offer the heating contractor an unusual opportunity to develop this kind of business. Thrush Pressure Reducing and Pressure Relief Valves make the water system safe from excessive pressures and greatly increase the efficiency of water supply. These Valves are made in a wide range of sizes as shown in the illustration at the right and they are priced exceedingly low, when the fine quality of their manufacture is considered. Thrush Pressure Reducing Valves are of Red Brass, with Strainers built in. Thrush Pressure Relief Valves are made of gray iron with free water passages and built without any tight fitting working parts. Nickel silver diaphragms and brass working parts assure satisfaction. They are listed and approved as standard by Underwriters' Laboratories. Use the coupon to ask for literature and prices.

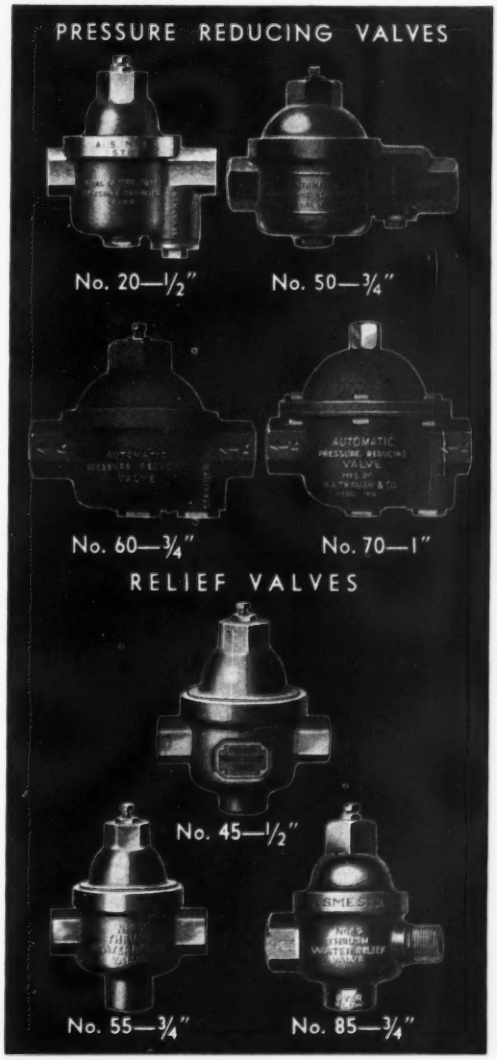
THRUSH SYSTEM OF HOT WATER HEATING

You can modernize hot water heating plants in your community at low cost with Thrush System, increasing heating efficiency and the customer's satisfaction—realizing a nice profit for yourself. You can get this kind of business if you will go after it—pointing out to your prospects that Thrush System will pay for itself in fuel saving and increased comfort. If you are not already selling Thrush System of Hot Water Heating, ask for full information.

H. A. THRUSH & CO.
PERU, INDIANA

●

● MAIL THIS COUPON AT ONCE! ●



H. A. Thrush & Company
Box 459, Peru, Indiana

..... Please send literature and prices describing Thrush Domestic Water Supply Systems.

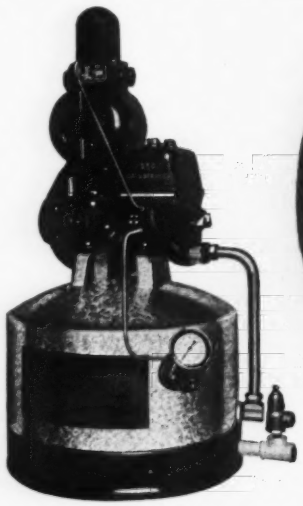
..... Please send full information on Thrush System of Hot Water Heating.

NAME .....

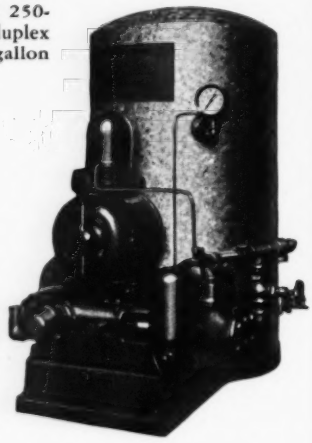
ADDRESS .....

CITY ..... STATE .....

A better deal for



The New F-M 250-gallon per hour duplex pump with 12-gallon tank.



The New F-M 500-gallon per hour duplex pump with 35-gallon tank.

F-M Electric Driven Type "C" Deep Well Water System. *Complete* with pump, top-mounted motor, tank, pipe and control equipment ready to receive drop pipe and house service connections.

TIMES have changed! Old methods, old products and old dealer arrangements must go! *The dealer is the all-important cog in the distribution machinery of a regained prosperity.*

Therefore, Fairbanks-Morse, as the leading manufacturer of Home Water Systems, declares a better deal for dealers. **LONGER DISCOUNTS**—a bigger profit from each sale. A profit large enough to permit the dealer to accomplish an aggressive selling job in his trade area. A profit large enough to make the selling of Home Water Systems the most profitable item in the dealer's line.

NEW PRODUCTS—These brand new F-M Home Water Systems are eye-catching in their external appearance. New features and advanced mechanical design and

FAIRBANKS,

Manufacturers

CHICAGO, U. S. A.

FOR 1933

The new F-M line of Home Water Systems and the new deal for the dealer is *but the first step.* In 1933, additional items and new selling aids will be placed at your command. It is the intent of Fairbanks, Morse & Company to make this new deal—products, discounts, price, profits—the most revolutionary success of the industry.

dealers!

construction appeal at once to the practical home owner. Fairbanks-Morse challenges you to take any or all of the systems in this new line and make a direct comparison! Such a comparison inevitably brings you to the conclusion that F-M Home Water Systems are the line you will offer your trade.

NEW PRICES—Even the most reluctant purse must yield to the unequalled values in these F-M Water Systems. In this day of keen understanding of values, each of these systems is priced to *complete* a sale in your place of business.

The *above* is the Fairbanks-Morse idea of a better deal for dealers. If you are now handling Home Water Systems, check each of these important facts against your present profits. You will then want to use the coupon to receive more complete information.

MORSE & CO.

Branches and Service Stations
Covering Every State in the Union

USE THE COUPON

The decision to use the coupon at right in securing full information on the new F-M DEALER PROPOSITION may have an important bearing on the future of your business. By using the coupon, you are under no obligation whatsoever. It simply means that as a dealer, you will investigate every opportunity for a better volume and greater profits.

The "CHALLENGER"

List price f. o. b. factory. A complete, automatic system of 200-gal. per hour capacity. Other F-M Water Systems are similarly priced so you can get the business.

$59.50

The New F-M Self-Oiling Type "C" Water System arranged with 1½ h. p. "Z" Engine drive. A complete package unit, including tank, piping and control equipment.

PIN THIS COUPON TO YOUR LETTERHEAD

FAIRBANKS, MORSE & CO.
Dept. 110, 900 S. Wabash Ave.
Chicago, Ill.

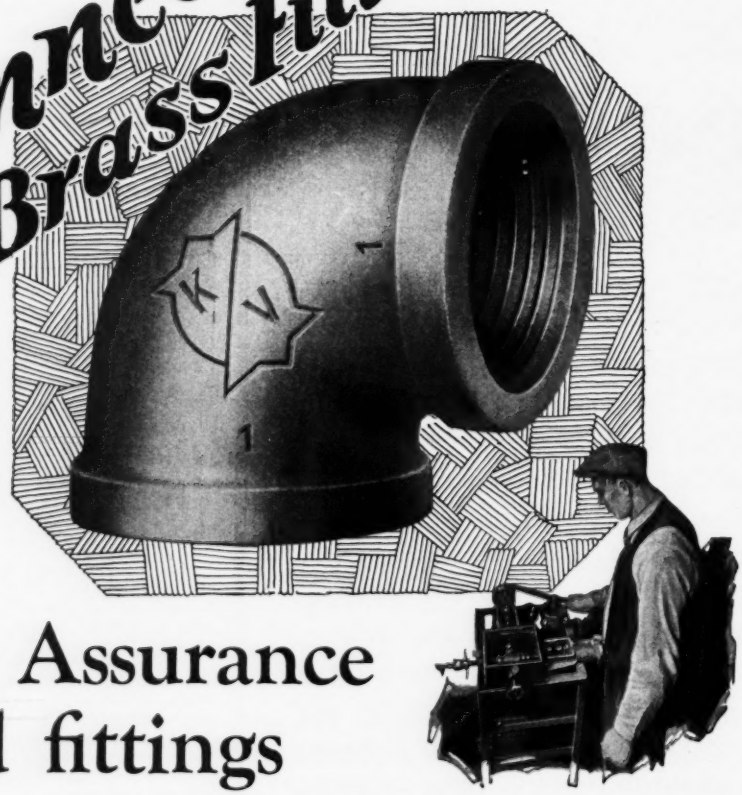
Gentlemen: Please send me full details about your dealer proposition on F-M Home Water Systems. *Also send copy of new dealer catalog.*

Name.....

Address.....

City.....*State*.....

Kennedy Brass Fittings



Double Assurance of sound fittings

WITH Kennedy Brass Fittings you are *doubly* sure of protection against leaks. Their high grade metal is your first assurance, for these fittings are made of the same tough, strong, uniform red metal that is used in Kennedy Bronze Valves. Thorough and individual testing is your second assurance, for every Kennedy Brass Fitting is separately tested by air pressure under water before leaving the factory.

Besides being leakproof, Kennedy Brass Fittings, like Kennedy Malleable Iron Fittings, are sturdily proportioned, attractive in appearance, and accurately machined. They assure speedy pipe fitting jobs becau e they start easily on the pipe and their clean, sharp threads and true alignment help to make up tight joints quickly.

Be sure to order Kennedy Fittings for your next job. A single trial will demonstrate the many advantages of standardizing on them for all your work. You can obtain Kennedy fittings and Valves from your local dealer at standard market prices.

Standardize on KENNEDY for ALL your Valves and Fittings

Standard Bronze Gate Valve

One of the large Kennedy line of bronze and iron gate, globe, angle and check valve types for a wide range of pressures.

The Kennedy Valve Mfg. Co., Elmira, N. Y.

Warehouses and Representatives in Principal Industrial Centers

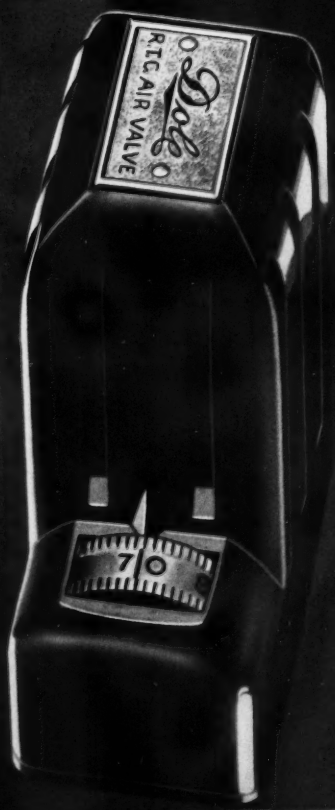
KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

PROSPERITY NOW

PROSPERITY NOW

SELL DOLE INDIVIDUAL ROOM TEMPERATURE CONTROL AT $6.00 PER RADIATOR



DOLE

R T C

AIR

VALVE

—OVER—

You Know Where this Belongs—on One Pipe Steam Systems

Your Knowledge is the Key to a New Profit

Pat. Pending

THOUSANDS of families are gathered again in rooms steam-heated by a one-pipe system. Other thousands will work under similar conditions this winter in offices or factories. These represent your market—already cultivated for you by the widespread interest in Room Temperature Control.

Devices giving results similar to those of the Dole R.T.C. Air Valve are selling for many times its price. If there ever was a money-maker made to order, it is the new Dole R.T.C. Air Valve. The market is ready. The price is far below the resistance level. Your profit piles up quickly.

You've heard of products that will sell themselves—but perhaps never seen one. The Dole R.T.C. Air Valve comes closer to being this rare bird than anything these tough years have seen. A little selling brings a lot of profit. Don't take our word for it; get into the swim and see for yourself. Already jobbers and steamfitters, who have made an early start, are pressing us to supply the demand.

Here are some of the straight-from-the-shoulder facts to think about while you are waiting for dealer literature:

- *Each radiator individually controlled by this combination regular air valve and thermostat. Acted on continuously by room temperature.*
- *Independent control of all radiator heat in any building having a one-pipe steam system. The bathroom can be maintained at 78°—the bedroom at 68°—living room at 72°, etc.*
- *Simply installed without changes in the one-pipe system. Merely replaces the regular air or vacuum valve.*
- *SAVES up to ONE-THIRD of the FUEL BILL.*
- *CREATES A MORE HEALTHY AIR CONDITION IN THE HOME.*
- *Guaranteed to operate satisfactorily. Will be replaced if found defective within 5 years.*

Are you going to go after this market when it is ripe and timely? Then, get going today. Tell your jobber you want a trial half dozen. Or, you jobbers who read this, send an initial stock order to cover requirements. Tell us you want to know the simple smashing sales points.

You will be interested in the principles which Dole engineers have applied, in creating this new device for your customers. Just say that you would like to know more about the Dole R. T. C. Air Valve and how it works. We will put the big profit story before you without obligating you in any way. Simply tear the coupon out of this sheet, fill in, and send it.

THE DOLE VALVE CO., 1913 Carroll Ave., Chicago, Ill.

Note the sharply reduced prices on the Dole 2B Vacuum Valves—and the 6B's. Also the new low price on the Dole Syphon Air Valve No. 1. For "rock bottom" on a reliable vacuum valve get our new quotation on the Dole No. 2 and No. 6 Valves.

The NEW DOLE R.T.C. (Room Temperature Control) AIR VALVE

THE DOLE VALVE CO.
1913 Carroll Ave., Chicago, Ill.

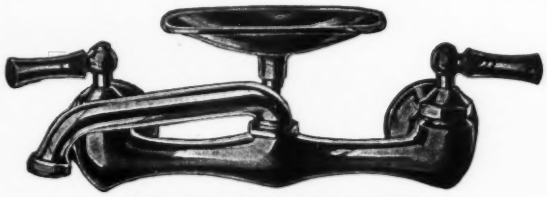
More information, please! I would like to know the full facts about the Dole R. T. C. Air Valve including prices.
My classification is ☐ Jobber ☐ Steamfitter.

Name_____ Firm Name_____

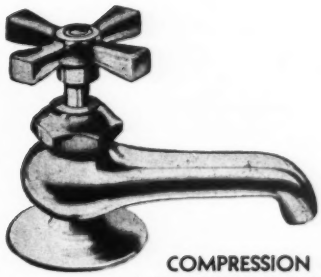
Street and Number_____ City_____ State_____

Printed in U.S.A.

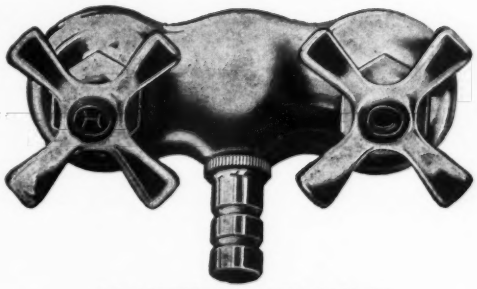
CAPITOL



COMBINATION SINK FAUCET



COMPRESSION
LAVATORY FAUCET



COMPRESSION BATH FAUCET

COMBINATION
LAUNDRY TRAY FAUCET

"Plumbing fixtures by Capitol Brass" is synonymous with the very finest obtainable in this type of equipment. Thoroughly up-to-the-minute in design, their workmanship is such as can be turned out only by skilled craftsmen with the most modern of plant equipment. Capitol faucets now have the finest washers ever made—practically indestructible.

Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN

MALLEABLE IRON FITTINGS

THE pipe lines you install are your unseen friends or enemies. If they go on year after year, trouble-free, leak proof, forgotten except for the service they give—then they are the strongest friends and business builders you can have.

To make them a stamp of your excellence in workmanship and judgment, you must select the finest of pipe and fittings. The make of pipe is not our task, but the making of fine malleable fittings is.

Everything that years of experience, time, patience, skilled workmanship, good materials and money can put into a fitting to make it outstanding goes into every M.I.F. Fitting made.

Your jobber is your source of supply for M. I. F. Fittings.

MIF

MALLEABLE · IRON · FITTINGS · COMPANY, BRANFORD, CONN.

WISECO

COMBINATION LAVATORY and WASTE FIXTURES

The Standard Of Quality Since 1877

If you want your customers to get the most for their money — sell the WISECO Combination Lavatory and Waste Fixture.

Furnished in either China or All Brass Trim. Long or short spout. Nickle Polished or Chromium Finish.

This fixture will meet your every requirement.

At all leading jobbers.

WISECO TRADE MARK EST. 1877 INC. INC. 1917

J. B. WISE, INC., WATERTOWN, N. Y.

NEW YORK · ATLANTA · DETROIT · CHICAGO · LOS ANGELES · SEATTLE · SAN FRANCISCO

MAIL
THE COUPON
for our

RED BOOK

. . . It shows you how to do it

THE American Blower Red Book shows you how to write your own profits selling and installing Venturafin Unit Heaters. It is a book packed with effective and tried sales methods. It contains actual samples of direct mail folders, cards, surveys *in color* . . . direct mail literature that has been especially designed to make money for *you*.

In addition, the Red Book makes available to you *without cost* a series of individualized newspaper advertisements, installation data and many other helps. It shows you how to cash in on American Blower's extensive national and trade journal advertising program. Mail the coupon for your copy of the Red Book today. Start writing your own profits *now*.

Venturafin Unit Heaters for Economical and Controlled Heat

AMERICAN BLOWER CORPORATION
6000 RUSSELL STREET
DETROIT, MICHIGAN

Gentlemen:
Please send me a copy of the *American Blower Red Book* at once. I understand I will not be obligated.

*Name*_____ *Firm*_____

*Street*_____

*City*_____ *State*_____

AMERICAN BLOWER CORPORATION, DETROIT, MICH.
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONT.
BRANCH OFFICES IN ALL PRINCIPAL CITIES
(1172)

HEAT WITH UNIT HEATERS

American Blower
VENTILATING, HEATING AIR CONDITIONING, DRYING MECHANICAL DRAFT

NOW Automatic Stream Regulators for TE-PE-CO Drinking Fountains

Our Guarantee
We make but one grade of ware—the best that can be produced—and sell it at reasonable prices. We sell no seconds or culls. Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world. The Te-pe-co trade mark is found on all good manufactured by us and is your guarantee that you have received that for which you have paid.
TEPECO

THE beauty and practicability of design—the superlative quality and long, trouble-free service—of Te-Pe-Co Drinking Fountains is a matter of general knowledge.

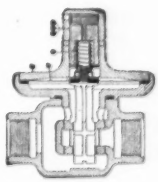
But—it may be news to you that these nationally famous fixtures are now equipped with Automatic Stream Regulators—and it's good news!

Now those who prefer Automatic Stream Regulators may enjoy this feature in combination with all the other advantages which products of The Trenton Potteries Company have always offered.

SIX POINTS of Stream Regulator Superiority

1. **Assures a constant height of drinking stream regardless of fluctuation in pressure.**
2. **No waste of water because balance valve delivers every drop of water entering regulator to the bubbler without discharging into waste line to maintain even height of stream.**
3. **Eliminates exposed metal from basin by locating regulator between bubbler and control valve.**

4. **Durable construction so designed that bronze spring and adjusting screw do not come in contact with water nor are there any small orifices to be affected by sediment.**
5. **Can be adjusted under pressure as regulating screw is sealed from water by diaphragm.**



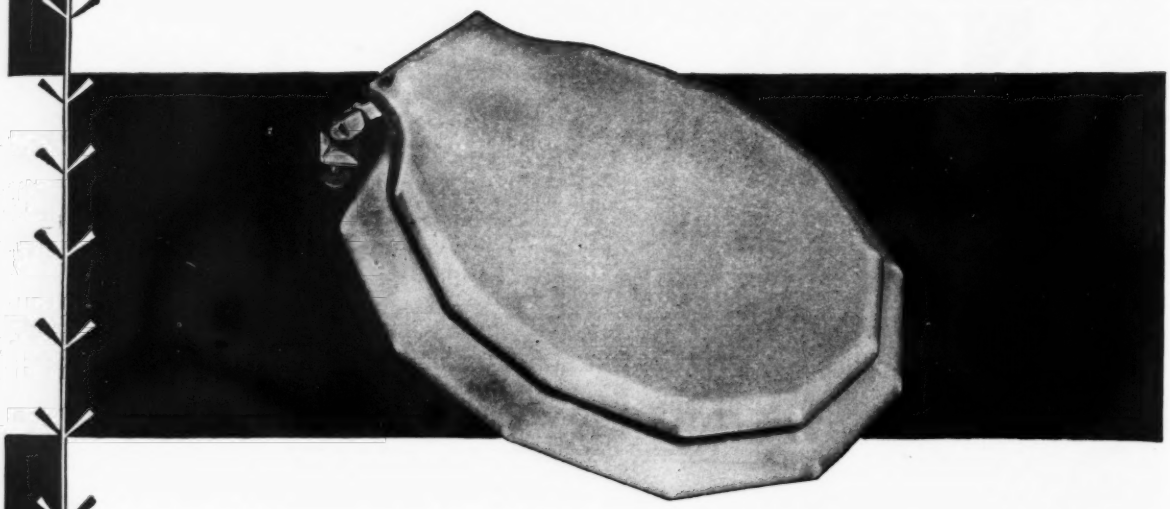
6. **All operating parts easily removed whether exposed or concealed in fountain without disconnecting body of regulator.**

Te-Pe-Co literature mailed upon request.

THE TRENTON POTTERIES CO.
TRENTON, N. J., U. S. A.

National Showrooms	*Philadelphia*	*Branch Offices*
New York City—101 Park Ave. Entrance on 41st St.	Architects' Building 17th & Sansom Sts.	Boston and Chicago

Export Office—115 Broad St., New York City



IT'S TIME YOU MADE SOME MONEY

and this new seat will make it for you

Modernistic in design—instantly appealing in appearance—the Olympic (latest addition to the Stasco line) offers immediate and future profit possibilities never before known to the trade.

No new seat has ever looked so good. No new seat has ever sold so well. No seat ever offered so ample a profit for retailer and jobber.

Olympic is a quality seat that lists at $5.95 in white—or in colors. It is packaged for display in window or store—and described and illustrated in an attractive piece of selling literature supplied for your use with your customers.

Olympic is a *quality seat* making tremendous selling strides in a *price market*—or what some people have believed was a price market. Look again at that radiantly new and unusually attractive design—then write *now* for complete information and prices.

STANDARD TANK AND SEAT CO., Camden, N. J.

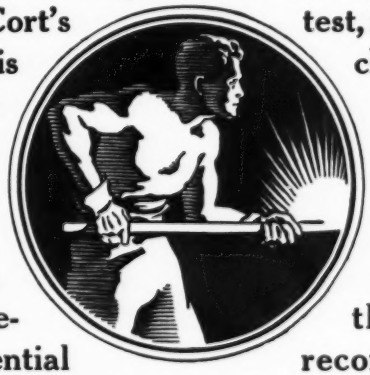
THE OLYMPIC

in WHITE & COLORS
at $5.95 *retail*
with beautiful
Chromium Plated
Hinges

STANDARD TANK AND SEAT CO.
CAMDEN, N.J.
Makers of STASCO *Toilet Seats*

WHY
Reading Puddled Iron Pipe is BETTER than ever before

In the early 1830's, Cort, noted English Engineer designed the first puddle furnaces using coal as fuel. Such furnaces produced the metal which has made wrought iron famous for its high resistance to corrosion and fatigue. The furnaces in which the metal for Reading Puddled Iron Pipe is made, are built on Cort's designs. Reading metal is puddled by hand as Cort planned and as Time has proved to be best.



More Than That

Reading Puddled Iron is better today than ever before because to the essential processes developed by Cort, Reading adds scientific control of production with rigid and exacting inspection of raw materials, processes and finished pipe unknown in the past.

In making Reading Pipe, Reading's superintendents have the advantage of high-grade iron ore from Reading's own iron mines. They control pig iron production in Reading's own blast furnaces. Under them is a force of puddlers trained in the Reading plant, many of them being the fourth generation of iron puddlers trained in the Reading mills. Throughout the making of Reading Pipe they test, inspect, and maintain the closest possible scientific control.

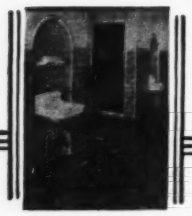
That's Why

Today you buy better Reading Puddled Iron Pipe than any of the pipe that has set the service records for which wrought iron is so famous. You can install it with greater certainty of receiving trouble-free service than even past generations could. A few dollars more for the average pipe installation, assures you of lower cost per year of service. If you need really GOOD pipe for any service, consult us.

READING IRON COMPANY, Philadelphia

READING PIPE
PUDDLED IRON
Since 1848

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron



BETWEEN OURSELVES

A New Service

A FEW pages farther along in this issue, you will find a new editorial feature and service. It is a section set aside for the "Automatic Heat and Air Conditioning Dealer." And that means a lot of the readers of DOMESTIC ENGINEERING.

Business Is Changing

THIS decision to extend the editorial service which you have been getting from this publication is, of course, not just an idea of ours. It is a change made necessary by the modifications which our readers have been making in their business.

Looking Ahead

WHEN any of us is in the center of the forest, we don't see it because the trees nearby claim all of our attention. In the same way, immersed in the many and varied activities of carrying on a successful plumbing and heating business, one can easily overlook a trend which may ultimately mean more to the success of that business than the day to day happenings. But a business publication like DOMESTIC ENGINEERING owes it to its readers to catch those trends, interpret them properly and place their significance squarely before its readers. The business magazine to serve its readers adequately must report the present and interpret the future.

Owners Demand More

ALL of this is one way of bringing this new editorial section on automatic heat and air conditioning to the attention of our more thoughtful readers. Of those who have been buying, selling and installing heating products, many recognize the alterations which are taking place in the field. The coupling of the automatic heat feature with the air conditioning idea has begun to make the American home owner expect more service, with less effort, from his heating plant.

A Changing Picture

AUTOMATIC heat has made itself almost essential, like many other American developments which first appear as the luxuries of the few only to prove their right to be considered the necessities of the many. And in its development, automatic heat has introduced a new chain of activities, new problems in installations and service, new ideas in merchandising. Air conditioning means additional changes.

Giving Service

IT IS to the credit of the heating contractor that his approach to a new development is to want to learn all about how it works. Some manufacturers of mechanical equipment for domestic use may at first prefer to see a prospective dealer grow enthusiastic over sales possibilities and ignore the factor of how the equipment may prove out in service. But more of them are constantly learning that customer satisfaction is the foundation upon which to build a business and a heating contractor is trained by all his previous experience to think first of all of putting in equipment which will work satisfactorily.

A Complete Service

THIS new editorial service will bring to our heating readers definite information on the essential principles involved in installing workable automatic heat plants and effective air conditioning equipment.

Planned for Use

THE articles in this issue are well diversified to meet the needs and liking of every reader. Our discovery of how a contractor works successfully with coal dealers in developing business, brought back a request for more information which we secured and offer in a practical report. A new summary of today's best knowledge on pipe sizing for domestic water supplies is something we are proud of, as it comes to our readers some months before its publication in a 1933 reference book. Some interesting trouble jobs are told about, and better yet the solutions which overcame them are given. Efficient office methods are explained as worked out by one contractor in preparation for the time when efficiency and economy are going to swing jobs and make profits. The issue is planned for you and we present it for your use.

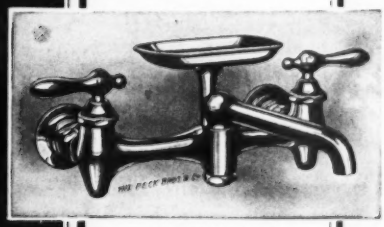
Your Editor

6307-A

A COMPLETE LINE ~ FOR COMPLETE SALES

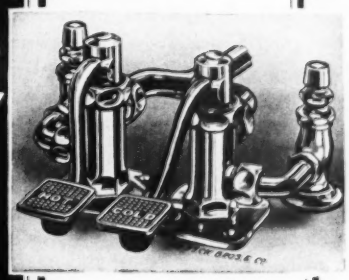
6658-A

5006½-A



6618-A-S

9530-A



9564-A

5380-A

Peck's Better Brass

5678-A

Builds Better Business

9600-A

ONE source of supply for plumbers' brass—Peck Brothers. No matter what your requirements may be, we can fill them, for we manufacture a complete line of high quality brass goods. One source of supply, one high quality and one responsibility when you buy from us. Write now for full information.

THE PECK BROS. & COMPANY

127 CHESTNUT STREET, NEW HAVEN, CONN.

THE STORY OF JOHN SMITH

Mr. John Smith is as plain and honest as his name. Neither you nor I have ever heard of him as a business leader, financier or economist. Yet I think he is one of the few who really understands what this depression is all about. He deserves a lot of credit for he has shown that it is still possible in spite of these keenly competitive times to RUN A BUSINESS AT A COMFORTABLE PROFIT.

Sounds like Magic but Mr. Smith says it only takes a little courage and common sense.

Mr. Smith has been a MASTER PLUMBER SINCE 1900. His business has never been large but he has a reputation for good work at a fair price. He doesn't believe in low wages or inferior materials.

I asked him how he did it. "Well," he said, "I figured when this thing started, that I'd have to reduce my prices in proportion to my customers' reduced incomes if I wanted to keep my trade. My boys are good honest workmen and I DIDN'T WANT TO CUT THEIR PAY so I just guessed that I would have to make it possible for them to do more good work in less time.

"About that time a salesman came along with a new pipe machine. It looked like a dandy outfit but I didn't think at first that I could make it pay unless I had a good size job. Well sir—HE SHOWED ME SOMETHING.

"I had just landed a 20 radiator hot water remodeling job. He told me that by using the machine I COULD SAVE AT LEAST 10c PER THREAD and 5c PER CUT. That figured a saving of about $25.00 for the job.

"I bought the machine and set it to work. We estimated 160 hours labor and our actual time was 74 HOURS, a saving of 86 hours or about $100 on that one job. A few days later we got another remodeling job somewhat smaller than the first one.

"Again we finished way under our labor estimate. I started passing the savings on to my customers and they in turn told their friends of my low prices; which I think has brought me in much more new business than I could have obtained by advertising in the newspapers.

"The machine, a 'TOLEDO' No. 999, wasn't the only way we cut costs. I checked over my men's tool kits and scrapped every vise, stock, wrench or cutter that wasn't in A No. 1 condition. I figured that this was the time beyond all other times when I couldn't afford to take a chance on having to spend $15.00 or $20.00 extra on each job because John's dies didn't cut clean and Henry's vise wouldn't hold. I give my men the best tools that I can buy and believe me the saving in time, and the freedom from leaks are worth twice the cost of the new tools."

How wise of Mr. Smith. He has done just the opposite of what most of us would do. We all know of better ways to do our work but hesitate on account of the initial investment to replace worn out or obsolete tools. Mr. Smith doesn't look at it in that light. He thinks of how much he can save by installing new methods. His is the spirit of real progress.

Now, Mr. Reader, are not you perhaps losing business because of your inattention to up-to-date methods that your competitors have adopted? Therefore hadn't you better scrap your worn out and obsolete equipment? John Smith would say, "Yes," and can prove it.

If anyone desires to verify the above facts and figures write us and we will gladly advise the name of contractor and his address so you can write him if you wish to do so.

THE TOLEDO PIPE THREADING MACHINE COMPANY, Toledo, Ohio

New York Office and Display Room, 72 Lafayette Street

OUR INDUSTRY

Selected Dealer Plan Deserves More Study as Key to Profit

One of our field men told us last week about a contractor in a small Ohio town. This contractor has a record of success as a business man over a period of many years.

As business fell away, this man was forced slowly to cut his organization, finally having discharged five of his journeymen. Each of these men, facing the problem of earning a living, chose to stay in the plumbing and heating business. No doubt they were surprised to find how easy it was to get in.

More Competitors

Now the established contractor is finding things harder because five of his old employes compete against him for the fewer orders. And no doubt other contractors in the same town have self trained competitors.

Do the men in wholesaling and manufacturing branches who have helped to put these many new competitors in business believe that any additional business has been created? The established, prompt paying firms are being forced to take jobs near or below cost because these new men always operate more on the losing than the winning side. But does that make more business?

Gives Up Business

Down east we know another contractor who has given up the heating and piping business because he was always competing against low bidders who offered the same products as he handled. He is now a dealer for a warm air line, his territory is reserved for his development and he can concentrate on getting an order without worrying about a competitor coming along with the same products but a cheaper price.

In Milwaukee, we learned that the products of one manufacturer are displayed in 80 places. But customers can buy those products from 400 dealers. How can these 80 contractor-dealers carry on the merchandising job they are asked to do, how can they finance salesmen, advertising and displays, when 320 competitors without such expenses can buy the same products at the same prices?

California plumbers, as told in these columns in our August issue, found recently that there were 1200 licensed plumbers serving the three million persons in Southern California or one shop to every 2500 persons. They estimate from their records that 7500 persons are required to maintain a plumbing shop in today's market so that 400 dealers are all that is needed—not 1200. And they predict that handling sales through 400 of the best men instead of trying to get business from the 1200 would permit those dealers to finance 300 new showrooms in that district.

Compete for Customers

As told on this page in our last issue, we feel that the efforts of this industry to learn how to merchandise have been too often imitative rather than creative. Merchandising is a different task than contracting, yet many manufacturers expect the contractor to become a merchant without the manufacturer also having to change his plan of doing business. Too many manufacturers compete for customers instead of dealers.

When manufacturers and wholesalers sell every man with a license, no contractor or dealer has a sound reason for pushing their goods. Such a dealer is merely spending his money to develop a market for goods which another man can supply without this expense of creating the market.

Select the Dealers

This industry needs some definite action to put itself into shape to compete for business on a basis from which every branch can profit. Too much emphasis is being put on price without stopping to realize that price is a secondary not the primary problem. Selected dealers seem to offer a sensible solution—at least it merits more study than it has been given.

Open New National System of Home Loan Banks

Because of the definite help to the building industry which many see in the opening on Oct. 15 of the new home loan bank system, we are printing the following article by Ward B. Whitlock, president of the United States Building and Loan League, explaining simply the purpose and methods of these new banks. With all of our readers interested in the resumption of building, both new and remodelling work, they will find this article helpful in learning how the new home loan banks system may help building in their own cities and towns.—The Editor.

THE home loan banks will open October 15. Twelve regional banks each serving a district of two or more states, will then have on hand capital ranging from a minimum of $6,000,000 in the smallest bank to a minimum of $20,000,000 in the largest of the twelve.

These funds will be available to home financing institutions specifically set forth in the law, building and loan associations, homestead associations, co-operative banks, savings and loan associations, insurance companies and savings banks. These institutions will borrow from the home loan banks on security of the home mortgages which they now hold. Through them the home-owners will be able to get loans.

Thousands of home owners have been asking the question, ever since the president signed the act on July 22, "What do I do to get a loan?"

HOW HOME OWNER GETS LOAN

The answer is that the individual proceeds exactly as he would have before the system was set up. He goes to a local home financing institution and applies for a loan. The difference is that after the home loan bank system is in operation, he will find that the local institution has money to loan him, up to the limits of its borrowing power from the home loan bank, and of the funds that the bank itself can make available to its member institutions.

Take an example: John Smith has a mortgage for $2,500 on his $5,000 home out in the suburbs. That mortgage has come due for refinancing. John Smith is not in arrears on his interest. He is still able to prove his future ability to repay. His trouble is that he can't pay off the principal of the mortgage because he hasn't the available cash, and up to now he hasn't been able to find any institution with the available cash to extend his loan.

After the home loan banks have opened, he may go to a building and loan association. That association is eligible to borrow from the home loan bank in its district either through its membership in the bank or through compliance with certain temporary provisions in cases where state laws have not yet been changed to permit stock subscription in the bank. On the security of its sound mortgages this association has been able to borrow substantial sums from the district bank. John Smith applies for a loan of $2,500. The association makes the loan on a monthly installment basis, payable over a period of eight to eleven years, let us say, with Smith contracting to pay installments of combined principal and interest each month until the mortgage is paid off. Smith will own his home outright at the end of that time. Meanwhile he will not be harassed by the imminence of another maturity date, when he will again be seeking refinancing.

LOANS FOR REMODELING

The same procedure applies when Henry Brown wants a loan on his home in order to finance some long needed repairs, or some building work which will bring that much-prized home up to date. Again, if James Jones has awakened to the fact that the little home of his own which he has been anticipating for ten years can now be built at bargain prices, he will go to a building and loan association which is eligible to borrow from the home loan bank. The association, as long as its own borrowing power and the home loan bank's lending power holds out, will make such loans. They will be on the same long-time basis described above.

ELIMINATES RED TAPE

So much for the individual borrower. He will have the full benefits of the home loan bank system without having to go to any more red tape than he ever did to get his loan. This does not apply to every man who wants a home, or every body who wants refinancing. Obviously there are bad risks, there are existing mortgages which have proved the inability of the mortgagor to carry out a home-owning enterprise. Nobody can expect the member institutions of the home loan bank to extend credit to this type of citizen. The members must continue to be sound institutions managed on a business

Help to Home Owner Is Seen as Aid to Industry

basis, if they expect to continue their affiliation with the federal system. The sensible citizen will take this into consideration when he contemplates the financing he can expect as a result of the operations of this law.

BANKS JOIN SYSTEM

The Federal Home Loan Bank System is similar to the Federal Reserve System in that the banks deal with financial institutions just as federal reserve banks are bankers' banks. When a commercial bank needs money it borrows it from the reserve bank. So, as I have already pointed out, local home financing institutions will borrow from the home loan banks in order to provide their localities with the home mortgage money they need.

The foundation of this borrowing power is membership in the system, just as banks have to be members of the federal reserve in order to discount their paper there. For such membership the association subscribes to capital stock in the Federal Home Loan Bank, equivalent to 1 per cent of the amount outstanding on the total mortgages it holds. The minimum of these stock subscriptions must be $1,500, according to the law, even where the association's 1 per cent of mortgages outstanding is less than that amount.

BORROW ON GOOD MORTGAGES

In states where the existing laws do not permit this purchase of stock, the home loan bank act provides that eligibility to borrow may be established by an association by meeting the following conditions: Until the next regular session of the state legislature has met and considered an amendment to change the state law to permit membership in the federal institution, the associations must keep on deposit with the home loan bank security which shall equal 1 per cent of their total mortgages outstanding, with $1,500 as a minimum. This security must be in addition to the home mortgages pledged as security for loans, and the Federal Home Loan Bank board shall pass upon the eligible nature of such deposits.

Having established in one or another of these ways, its eligibility to borrow, the association may then obtain a maximum of twelve times the amount of its stock subscription, or its deposits of eligible security. On what basis then does it borrow these substantial sums?

The borrowing association pledges certain mortgages that it holds on homes in its locality as security for loans from the home loan bank. The law provides that in the case of amortized, monthly installment mortgages, such as, for example, those of building and loan associations, the institution may borrow on one mortgage, 60 per cent of the amount outstanding on that mortgage. For instance, the building and loan association has made an original loan of $3,500 to George Johnson. It holds his mortgage for that amount. By monthly installments on principal and interest Mr. Johnson has paid that mortgage down to $2,800. The association may pledge that mortgage to the home loan bank as security for a loan of not more than $1,680. At the same time he must make sure that the present appraised value of Mr. Johnson's home is such that $1,680 is not more than 40 per cent of the value of the property.

HOW NEW MONEY IS SECURED

Now where is this new money for home financing coming from? In the beginning, the Reconstruction Finance Corporation is empowered to advance a maximum of $125,000,000 to start the system in operation. The conditions under which these funds will be advanced are these: Subscription books for the purchase of capital stock by eligible home financing institutions have been open since September 15. The minimum capitalization of the twelve banks, as decided by the board, is $134,000,000. Whatever portion of this sum is not taken up by stock subscription on October 15, will be supplied by the R. F. C. out of its authorized loaning power in this case of $125,000,000. This is the source of the money which member institutions will borrow in the beginning.

But this government advance is only temporary. The sale of capital stock to eligible financial institutions will continue after the banks are open, and the government funds will be retired as the stock is gradually taken up by subscriptions after October 15. The law provides for a permanent source of funds for the home loan banks by the issuance of bonds of the federal home loan bank system. Safeguards placed around these bonds are so adequate that it is believed that they can be sold at very favorable rates, obtaining the additional home financing money easily. The experience of European countries which have similar central mortgage banking systems, issuing bonds, bears out this belief.

How to Estimate for Domestic

The auther of this article was asked to study and to bring up to date information on pipe sizes for domestic water supplies, for publication in the 1933 edition of a reference book. Through his courtesy, we are able to offer our readers in advance, the results of his work

By HAROLD L. ALT

THERE are practically no definite data for estimating the quantity of water likely to be consumed or the probable rate of water flow at any particular moment in the design and layout of the water supply piping for buildings. Metered results in one building often show two or three times the metered amount in another building of the same size and with the same type of tenants. In hotels, one riser often will have an almost constant flow that never may be reached by another even at peak load. In office buildings the women's toilets show a far greater daily consumption than those of the men, yet at no time will they approach the hourly consumption of the men's toilets during the first hour of the day. This condition has led to a multipicity of rules of practice which vary as much as the data used. All must of necessity be based on an assumed probability of simultaneous use, and while the formulae employed may have been derived on a sound technical basis, the assumptions are often in error.

SAFE METHODS OF USE

To arrive at a safe standard, the approximate rate of flow of each fixture to be supplied must be known and the probable number of fixtures in use at any one time must be assumed; it goes without saying that the maximum number of fixtures assumed to be in use must be taken at the peak of demand and that the lines must be made adequate to supply such a peak regardless of which riser or which branch it is on which it may occur. This means that all water piping under the usual conditions will be over sized just as a steam heating distribution system must be adequate to carry steam sufficient to meet the minimum outside temperature which may occur only a few times during the whole heating season.

In buildings of considerable height it is customary to break up the water supply systems, both hot and cold, into sections covering not over twenty stories—and preferredly less—down to about 10 stories. Such sectionalizing is for the purpose of avoiding the necessity of having excessive pressures to deal with on the fixtures in the lower stories of each system. This leaves the consideration of water pipe sizes to horizontal mains and to risers not exceeding twenty stories in height or about 200 ft.

It is impractical to attempt to size piping so as to produce the proper pressure on fixtures at different levels by employing friction owing to the fact that this friction will be built up to the amount desired only in times of maximum demand and at all other times the friction will be only a fraction of the maximum friction so that the fixtures by this method are subjected to a varying pressure on the water supply line. A much more practical method is to throttle the flow down at the fixture, or to use flow regulators, so that the quantity of water delivered will be somewhere near what the fixture demands and so that this is accomplished without splashing or noise.

For the purpose of this article, three terms will be

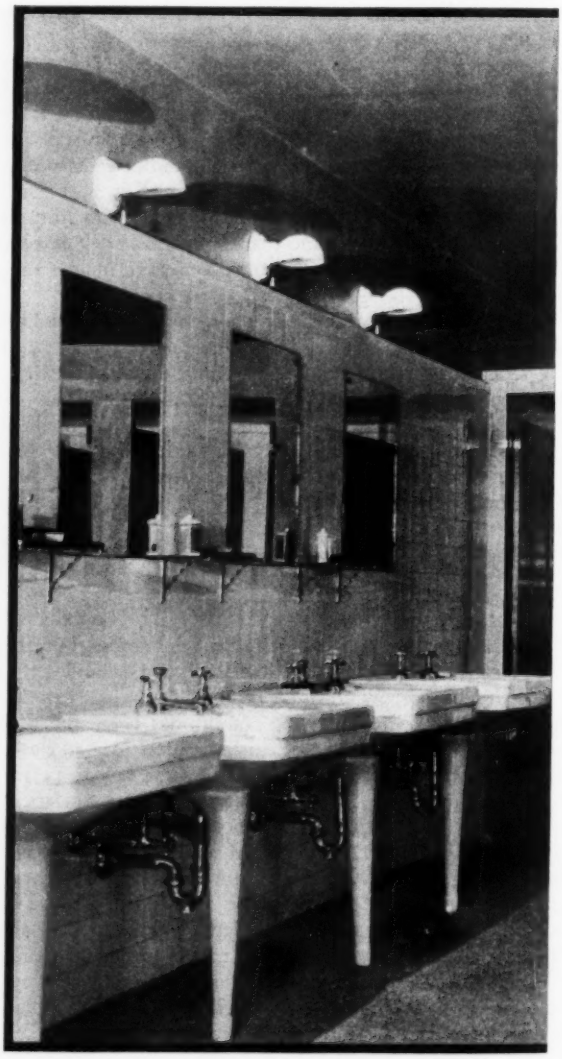


Fig. 1 — "Maximum possible flow would occur if the outlets on all of these fixtures were opened simultaneously"

and Size Pipes Water Demands

used and these should be clearly distinguished one from the other. These are as follows:

Maximum possible flow, the flow which would occur if the outlets on all fixtures were opened simultaneously and which seldom, if ever, is obtained in actual practice except in cases of gang showers controlled from one common valve and like conditions.

Maximum probable flow, the maximum flow which any pipe is likely to have to carry under the peak conditions and which is the most important amount to be considered in pipe sizing.

Average probable flow, which is the flow likely to be required through the line under normal conditions; it is evident that any pipe adequate to take care of the maximum probable flow also will be more than ample to care for the average probable flow and so this has no bearing on the pipe size.

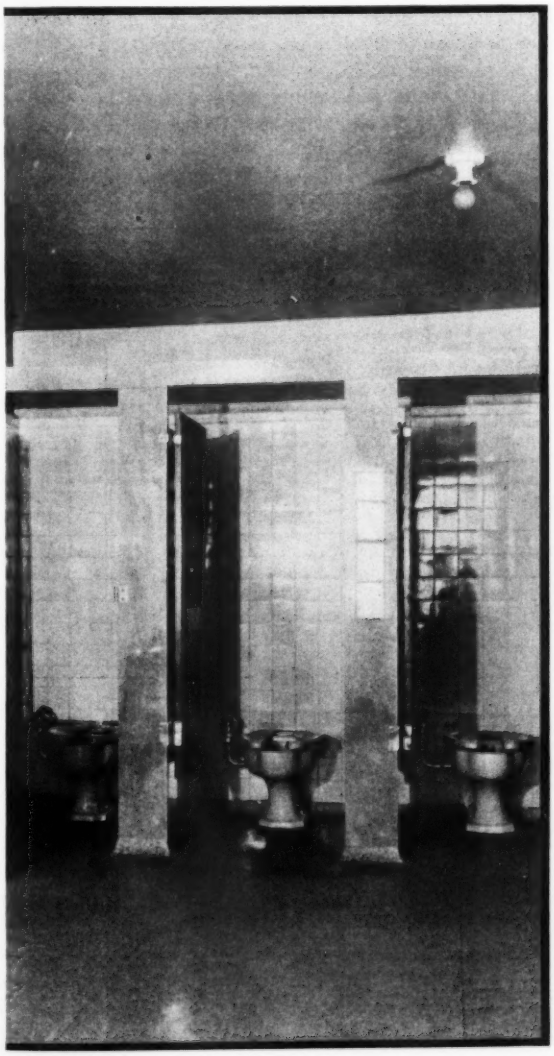


Fig. 2 — "Maximum probable flow is the maximum flow which any pipe is likely to have to carry under peak conditions"

BASIC DATA FOR MAXIMUM PROBABLE FLOW

There are two things to be considered in calculating the maximum probable flow and only two; these are how much water will flow from the fixtures when they are open and how many fixtures are likely to be open at *one and the same time.* Table I shows the approximate rate of flow from each fixture when it is in use and will be a useful guide in making probable maximum flow demands although there is considerable variation in different fixtures and valves. Probably the flow under normal water pressures, or with the pressure properly throttled, will not average up very far from the values quoted. With the aid of this table it is possible to calculate the *maximum possible flow* with all fixtures open in both the hot and cold water lines.

To obtain the *maximum probable* flow it is necessary to multiply the *maximum possible* flow by a *factor of usage* and this factor varies with the installation and the number of fixtures in it. It is self evident, for example, that with two fixtures it is quite possible, and even more or less assured, that both of these will be in operation at one and the same time either sooner or later. With 200 fixtures it is not possible or reasonable to assume that the whole 200 would ever operate at one and the same time. Consequently the factor of usage *reduces* as the number of fixtures becomes *greater,* all other things being equal. On the other hand it is probable that, outside of flush valve fixtures, the factor of usage would never go below 25 per cent to 30 per cent no matter how many fixtures were installed provided no fixtures in excess of the ones really required for the actual occupancy were included.

FACTOR OF USAGE VARIATIONS

This factor, beginning at 100 per cent for two ordinary fixtures, falls almost vertically until 5 fixtures is reached and then begins to turn toward an almost horizontal line as shown in the upper curve given in Fig. 5. This applies to the normal building and not to institutions where the inmates may all be required, for instance, to bathe on certain days of the week and at certain hours of those days. In such special cases a new factor of usage must be developed based on the maximum probable usage under the conditions involved. For flush valve fixtures the quantity of water is greater but, owing to the short duration of the flush, the simultaneous usage drops more rapidly so as to reach 1 per cent for 1,000 fixtures as shown on the lower curve, Fig. 5.

This can be proved by assuming, for example, 1,000 water closets which, at the best, could not be used over six times per hour (or once every ten minutes) and which require for a flush from 5 to 7 gallons or an average of about 6 gallons. If these closets were all being used at their utmost capacity, the water demand would be 600 gal-

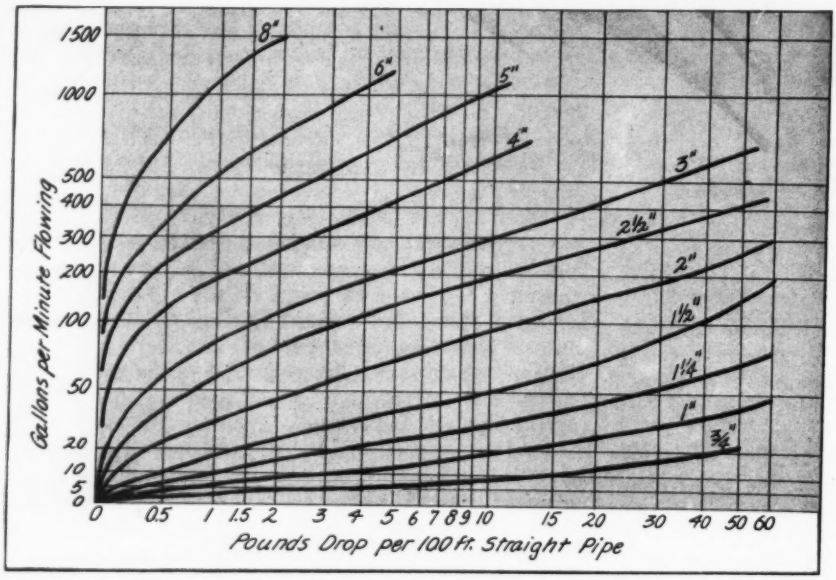


Fig. 3—This is a friction chart which shows the pounds drop per 100 ft. of straight pipe as against the gallons per minute flowing

lons per minute. But average use would be about 1/3 of this and peak conditions would be in the neighborhood of twice the average, giving about 400 g.p.m., as the maximum that would ever develop. Using 50 g.p.m. as the maximum rate of flow per closet and 1 per cent of the total closets the rate works out 50 g.p.m. x 1 per cent of 1,000 or 500 g.p.m. This is 100 g.p.m. higher than obtained by the first method indicating an additional factor of safety over the first method.

Let it be assumed that in a normal building, such as a residence hotel building or an apartment house, there are

50 Flush Valve Water Closets
50 Lavatories
50 Sinks
50 Baths

and that it is desired to determine the maximum probable flow in a line supplying all of these fixtures with both hot and cold water. As there are 50 water closets reference to the curve for flush valves, Fig. 1, shows a probable maximum use of about 8 per cent and, as there are 150 ordinary fixtures, reference to the same Fig. 1 and the curve for ordinary fixtures shows a probable maximum flow of about 31 per cent. This gives the following:

Cold Water

50 W.C. × 50 g.p.m. @ 8%..... 200 g.p.m.

50 Lavs. × 3 g.p.m..150 g.p.m.
50 Sinks × 4 g.p.m..200 g.p.m.
50 Baths × 5 g.p.m..250 g.p.m.

150 Fixt.....600 g.p.m. @ 31%.....186 g.p.m.

Total Max. Probable Flow of cold water....386 g.p.m.

Hot Water

50 Lavs. × 3 g.p.m..150 g.p.m.
50 Sinks × 4 g.p.m..200 g.p.m.
50 Baths × 5 g.p.m..250 g.p.m.

150 Fixt.....600 g.p.m. @ 31%.....186 g.p.m.

Both

Total for Main Supplying Both.....572 g.p.m.

It should be noted that this is a *rate of flow* and is not a demand based on even one minute's duration; it is in fact an instantaneous demand.

KIND OF PIPE USED

Before entering into the actual sizing of pipe, it is necessary to consider what kind of pipe is to be used and to make suitable allowance for corrosion and fouling in the years to come. For example, if brass or copper pipe is contemplated, it is probable that the above amounts are ample to allow; if galvanized pipe is to be used, then it is quite likely that after a period of 15 years or so as much as 25 per cent of the area may be lost and the gallons per minute given should be increased by 25 per cent to allow for this reduction of area as the years go by. If the water is full of lime it is quite possible that 50 per cent of the area may be lost so in such cases the flow in gallons per minute should be doubled to allow for this reduction and no branch pipe to fixture should be made less than ¾ in. In all of the calculations shown hereinafter the assumption is made that the water is fairly good and that brass pipe will be used.

TABLE I
Approximate Flow From Fixtures Under Normal Water Pressures

Fixture	C. W.	H. W.
Waterclosets, Flush Valve	50 g. p. m.	0
Waterclosets, Flush Tank	18 g. p. m.	0
Urinals, Flush Valve	40 g. p. m.	0
Urinals, Flush Tank	18 g. p. m.	0
Urinals, Automatic Tank	1 g. p. m.	0
Urinals, Perf. Pipe per ft	10 g. p. m.	0
Lavatories	3 g. p. m.	3 g. p. m.
Showers, 5 to 6½ in. heads	3 g. p. m.	3 g. p. m.
Showers, Tubular	6 g. p. m.	6 g. p. m.
Needle Bath	30 g. p. m.	30 g. p. m.
Shampoo Spray	1 g. p. m.	1 g. p. m.
Liver Spray	2 g. p. m.	2 g. p. m.
Manicure Table	1½ g. p. m.	1½ g. p. m.
Baths, Tub	5 g. p. m.	5 g. p. m.
Kitchen Sink	4 g. p. m.	4 g. p. m.
Pantry Sink, ordinary	2 g. p. m.	2 g. p. m.
Pantry Sink, large bibbs	6 g. p. m.	6 g. p. m.
Slop Sinks	4 g. p. m.	4 g. p. m.
Wash Trays	3 g. p. m.	3 g. p. m.

SIZING A FEED RISER FOR HOT OR COLD WATER

In sizing a riser arranged for down feed—as most risers are in tall buildings—the interesting fact develops that the gravity head permits a pressure drop that is almost prohibitive in an up feed riser. If it is assumed

that the distance from floor to floor is in the neighborhood of 10 ft., there is a gain in riser head of 0.43 lb., x 100 or 43 lb. per 100 ft. of run and so it is quite permissible to size such a riser on a pressure drop of 30 lb. per 100 ft. of run, as the difference between the 43 lb. generated and the 30 lb. drop under maximum probable demand is ample to take care of the fittings. This method applied to the typical riser shown in Fig. 4 gives a schedule of sizes as indicated in Table II for any flow from 5 gal. to 250 gal., provided these maximum probable demands have been calculated correctly. The method of sizing the horizontal branches will be taken up later.

UP-FEED RISER FOR HOT OR COLD WATER

When the riser is an up-feed one just the opposite condition occurs; that is, there is a natural drop in pressure as the top of the riser is approached, due to the natural reduction in the gravity pressure, and to this must be added the pipe friction plus that introduced by the pipe fittings all of which conspire to produce an excessive drop when compared to the conditions existing with a down-feed riser.

To size the up-feed riser the minimum pressure of the street main, or other source of supply, should be ascertained and from this should be subtracted the amount of 15 lb. (the pressure to be maintained at the highest fixture), and the height in feet above the source of water pressure multiplied by 0.43 to change the feet of head into pounds of pressure. The total length of run should be ascertained (from the source of pressure to the farthest highest fixture) and this should be changed to equivalent length of run to allow for the loss occasioned by the pipe fittings, Table III may be used for obtaining the additional lengths necessary to allow for the various fittings, valves, etc. The drop allowable in pressure per 100 ft. of run may then be obtained by multiplying the surplus pressure (over that required for gravity head and to supply 15 lb. at the fixture) by 100 and to divide this by the equivalent length of run to the farthest or highest fixture; thus:

Assume a street pressure of 60 lb., the height of the highest fixture 50 ft., and the length of the longest run 200 ft. Without knowing the additional length of pipe to be added for the fittings it will be assumed that this is about 100 ft. more. The surplus pressure which will be available for pressure drop then will be

60 lb.—(15 lb. plus 50 ft. × 0.43 lb.)

or

60 lb.—(15 lb. plus 21.5 lb.)

or

23.5 lb.

To change this into drop per 100 ft.

23.5 lb. × 100/(200 ft. plus 100 ft.)

or

23.5 × 100/300 or 7.8 lb. per 100 ft.

Then the pipe may be sized from the maximum probable flow by selecting a size that does not give a drop per 100 ft. in excess of 7.8 lb.

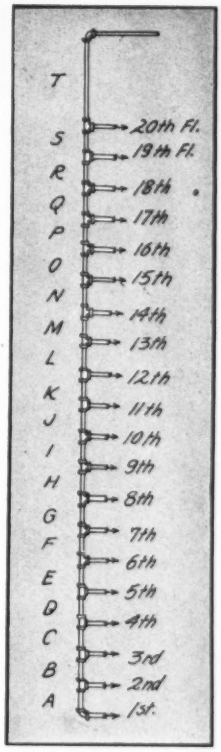


Fig. 4—This is the down-feed riser, the sizes for which are listed in Table II

It will be seen from the foregoing that it is impossible to size up-feed risers without—at the same time—determining the drop allowable in both the horizontal feed mains and toilet room branches; having once ascertained

(Continued on Page 144)

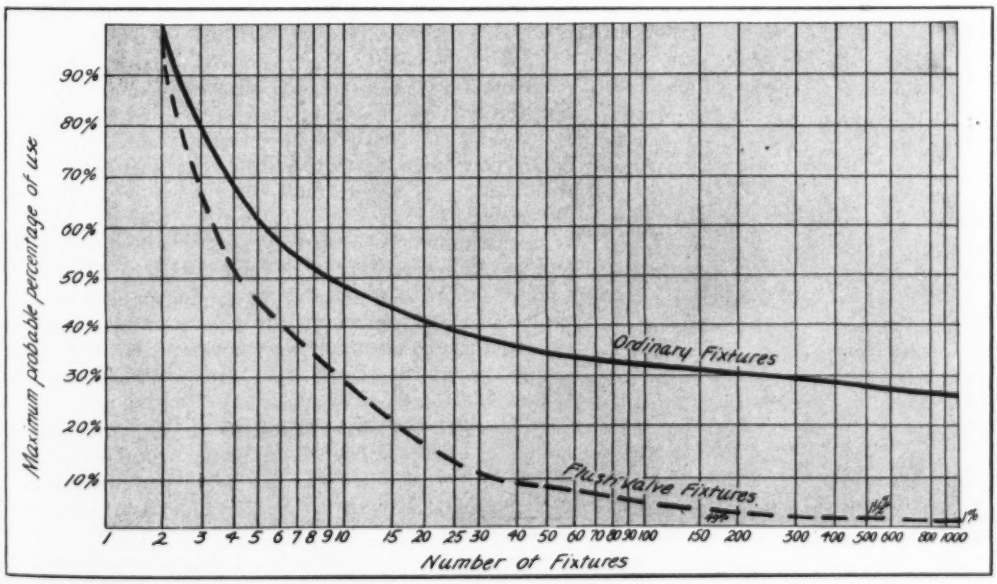
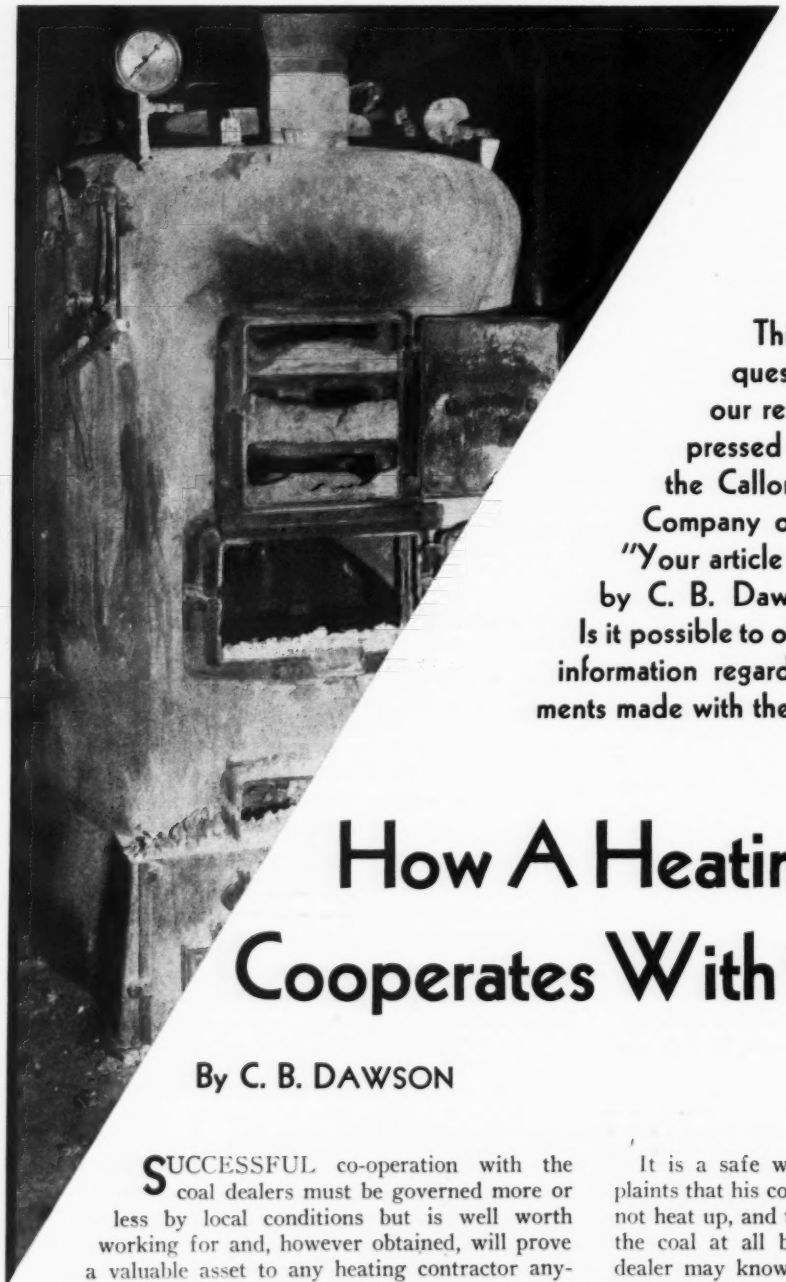


Fig. 5 — These curves give factors of usage. Here the maximum probable percentage of use is plotted against the number of fixtures. Note that as the number of fixtures increases, the percentage of use decreases



This article answers a number of questions, in the minds of many of our readers, which have been expressed in the following letter from the Callon Plumbing and Heating Company of Indianapolis, Indiana: "Your article in the September issue by C. B. Dawson is a good one. Is it possible to obtain more detailed information regarding the arrangements made with the coal dealers?"

How A Heating Contractor Cooperates With Coal Dealers

By C. B. DAWSON

SUCCESSFUL co-operation with the coal dealers must be governed more or less by local conditions but is well worth working for and, however obtained, will prove a valuable asset to any heating contractor anywhere.

The number of inquiries that we receive each year about coal—how much coal to buy, what kind of coal to buy, and where to buy it—first led us to realize how closely akin were the coal and heating industries. On the other hand the coal dealer receives perhaps equally as many inquiries about heating plants, and right there in a nutshell, as it were, may be seen the potential possibilities of business for both. No heating contractor can sit back and expect to get rich quick off of the business that friendly coal dealers throw his way, but nevertheless it will run into a nice little revenue. Every coal dealer has salesmen out who are daily making contacts with the owners of heating plants and fortunate is the heating contractor who gets them also to working for him.

It is a safe wager that every coal dealer gets complaints that his coal is no good, that it smokes, that it will not heat up, and the like of that, when in reality it is not the coal at all but it is the heating plant. The coal dealer may know his coal and be convinced in his own mind that it is not at fault, but unless he is also an experienced heating man, and how many of them are, it is hard for him to point out to the owner the real trouble and so absolve himself from further blame. That very state of affairs is an opening wedge for an alert heating dealer into the confidence of the coal dealers and in seeking their co-operation we emphasize above all other points how useful we can be to them when in nine cases out of ten "It isn't the coal. It's the heating plant."

Almost any coal dealer will listen to your story and be willing to work with you if you make it clear to him that he can feel free to call you on a job where his customer is having trouble with his heating plant and laying the blame on the fuel. One such question that we settled last winter to the satisfaction of all concerned was an

instance when the owner's boiler started to smoke the first day of the heating season. The coal dealer when called in looked the job over and found the flue clean and the smokepipe clean but the boiler itself clogged with soot. He was at a loss to know what the trouble was, and as he was dealing with a new customer, he was particularly anxious to prove his coal was not to blame. We learned that the owner had formerly burned gas in this boiler and by a process of elimination we determined that a baffle installed in the smokehood to increase the efficiency when burning gas was causing all of the trouble.

It has been keen competition from other fuels that has awakened the coal industry to the necessity of rendering service, as well as providing good coal. They may get into difficulties there, though, and another point to stress in talking to them is the fact that they should not attempt to service heating plants themselves as many have attempted to do. In recent years it has not been unusual to see in a coal dealer's advertising the slogan, "Let us clean your heating plant."

COAL DEALER'S EXPERIENCES

He may have been led to take up this sideline because of the profit which he figured there was in it. If so, I am afraid that he was sorely disappointed, for there is little profit to be made in cleaning alone and that is the only service that a coal dealer has to offer. He may have offered it free and taken it up because he thought it would increase his coal business, but results will be disappointing there, too, for there are few heating plants that need cleaning only and few owners who will trust other than heating men to work on their heating plants. For instance they do not want to run the risk of perhaps getting an expensive oil burner out of order just for the sake of having a little soot removed free. I know of one dealer here whom we could not get to line up with us and who decided to try it on his own. It is said that he spent $500.00 on newspaper advertising offering heating service and received only three inquiries.

An instance of coal-dealer heating service that came back as a boomerang to the dealer was in the case of a Mr. Allen. We had serviced Mr. Allen's heating plant for a number of years, but when we approached him last summer, he told us that it had only needed cleaning, and he had permitted his coal dealer to take care of it when he delivered his coal in the spring, as he would do it much cheaper than we. That was that, but shortly after the start of the heating season, he called us to come out and see what the trouble was with his boiler. It was smoking him out of house and home and never had done so before. He was heaping fire on the head of the coal dealer, accusing him of sending him an inferior grade of coal, blaming him for all of his heating troubles past and present, and bemoaning the fact that his greed for a bargain had led him to permit the coal dealer to clean his heating plant. We found the smokepipe, which had been taken down and replaced during the cleaning process, shoved in too far, corrected this error and there was no more smoke trouble.

OUTLINE OF CO-OPERATIVE PLAN

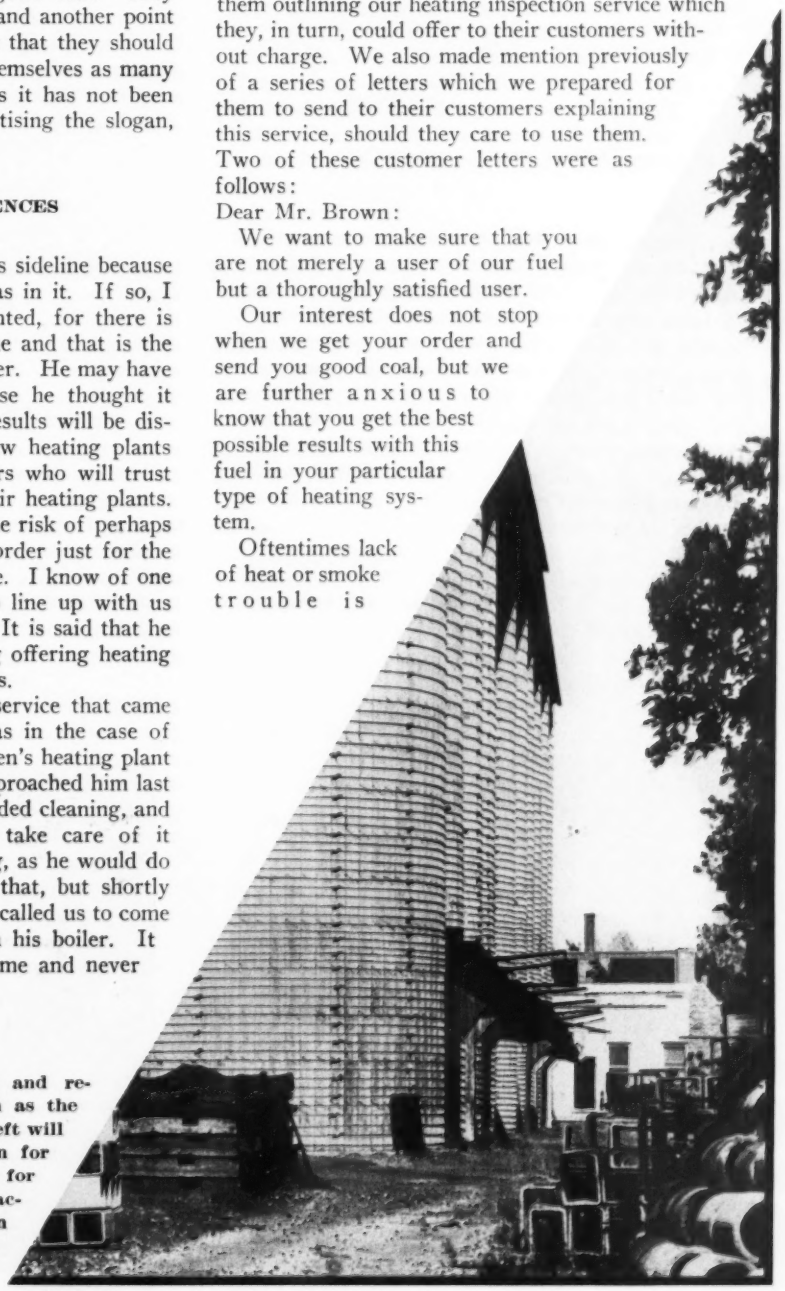
As outlined in a previous article, in first establishing relations with the coal dealers, we sent a letter to them outlining our heating inspection service which they, in turn, could offer to their customers without charge. We also made mention previously of a series of letters which we prepared for them to send to their customers explaining this service, should they care to use them. Two of these customer letters were as follows:

Dear Mr. Brown:

We want to make sure that you are not merely a user of our fuel but a thoroughly satisfied user.

Our interest does not stop when we get your order and send you good coal, but we are further anxious to know that you get the best possible results with this fuel in your particular type of heating system.

Oftentimes lack of heat or smoke trouble is



Boiler cleaning and repairing jobs such as the one shown at the left will result in satisfaction for the owner and profit for both the heating contractor and coal dealer when the plan outlined in this article is followed

blamed on the coal when it is some minor adjustment that is needed on the heating plant. We want nothing like that to happen where our coal is used, and so as an added service to our customers, we have arranged with the Dawson Heating Co. to work with us to that end.

As a matter of precaution, whether or not you are having any trouble, we shall be glad to have them make an inspection of your heating system and give you a complete report as to its condition. They will also advise you as to the most efficient manner of operation, how to take care of it, and how to get the best heating results with the least coal consumption.

This inspection which will cost you nothing will give you the facts about your heating equipment and is only one of the many ways by which we are trying to serve you better. If you will call our office on receipt of this letter, we shall have the inspection made for you at once.

Very truly yours,
Consolidated Coal Co.

A SECOND TYPE OF LETTER

Dear Mr. Brown:

Your heating plant and the fuel that it burns work hand in hand, and the efficiency of the one depends largely on the efficiency of the other.

We know the coal that we furnish to be the best obtainable, and now as an added service, we offer you Without Charge a check-up on your heating system.

Oftentimes lack of heat or smoke trouble is blamed on the fuel when it is some minor adjustment that is needed on the heating plant. We want nothing like that to happen where our coal is used and have arranged with the Dawson Heating Co. to work with us to that end.

Whether or not you are now a customer of ours, we shall be glad to have them make an inspection of your heating system and give you a complete report as to its condition. They will also advise you as to the most efficient manner of operation, how to take care of your heating plant, and how to get the best results with the least coal consumption.

It is a matter of satisfaction to know the facts about your heating plant, and we hope that you will take advantage of our offer which is merely one of the many ways by which we try to give you a complete fuel service.

If you will call our office on receipt of this letter, we shall have this check-up made for you at once.

Very truly yours,
Consolidated Coal Co.

So much for what we can do for the coal dealer and now for a little bit about some of the things that they do for us.

As we have lined up with the different dealers who work with us, we have made it a point to become acquainted not only with the dealers themselves but with their salesmen as well. We have not only assured them of our willingness to go out with them in case of trouble but have instructed them as to certain easily recognized troubles affecting proper combustion that they might look for in making their rounds. We show them how leaks around a boiler base will cause an owner to burn unnecessary fuel and perhaps kick about his coal bill. We show them how a damper in the smokepipe will keep the heat from rushing up the chimney and also prove a fuel saver, how boiler and pipe covering prevents overheating of the basement and sends the heat upstairs where it is wanted, but don't think for a minute that we give them these and other instructions just for the fun of giving them. We get returns from them every day.

"When a day passes without one or more prospects from a coal dealer, we think that there must be something wrong"

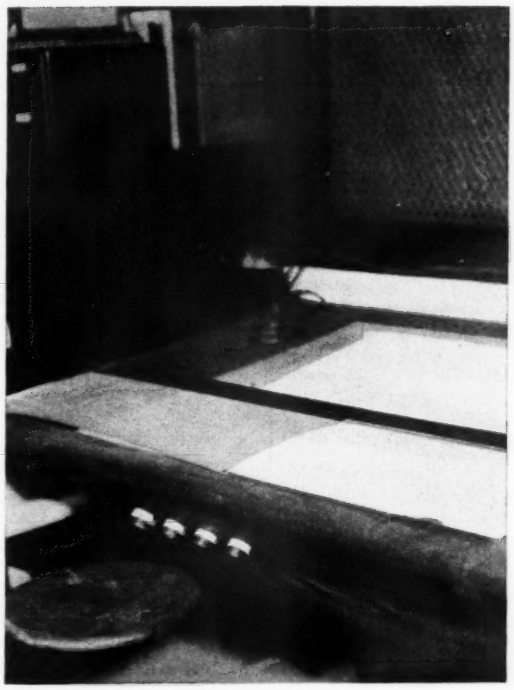
When a day passes without one or more prospects from a coal dealer, we think there must be something wrong. Some amount to a lot, others not so much, but we take the sheep with the goats and find that we come out winner by a big margin. I recall one day last week when we had three such calls that were certainly worth a follow-up. The least of them was on a heating plant that needed a general clean-up and servicing. Next in importance were repairs to two large boilers in an office building, while third and last was a prospect, resulting incidentally in a contract, for an entire new heating plant in a residence. Of course we do not get them like that every day.

It is not possible to line up with all of the dealers. Five or six out of twenty we would say would be a pretty good average. Some are simply not the co-operating kind, others imagine that they will antagonize all of the other heating trade if they co-operate with one particular heating dealer.

PROGRESSIVE DEALERS CO-OPERATE

We have found that it is usually the most progressive coal merchants who are the most willing to work with us, and they are the ones who count after all.

Once co-operation is established it takes little effort to keep it alive, just a friendly willingness to give and take and look out for one another's interests. Each year sees more coal dealers added to the list of those working with us, and we value their good will highly and appreciate the fact that business which we have obtained through them likely we would not have had otherwise.



How one of our readers took advantage of his spare time to bring his office methods and equipment up-to-date. He feels that when business gets back to normal there will be no time for it. He did not want to find himself trying to meet new competition with his old systems.

Office Methods Designed for Efficiency

By WM. W. STEVENS

GENERALLY speaking, the lay-out of any office which is well planned is a result of at least two considerations. These are efficiency and space. Often it is found that the most efficient arrangements are worked out in the most crowded spaces. Certainly compactness and efficiency go hand in hand. However, this is not meant to imply that efficiency is an outgrowth of, or even confined to, limited space conditions. It goes without saying that large quarters can be made to have time saving and convenience features.

The office which is considered here contains two features of interest. The first is the drafting table illustrated above as Fig. 1 and the second is the filing cabinet for blueprints shown at the right in Fig. 2.

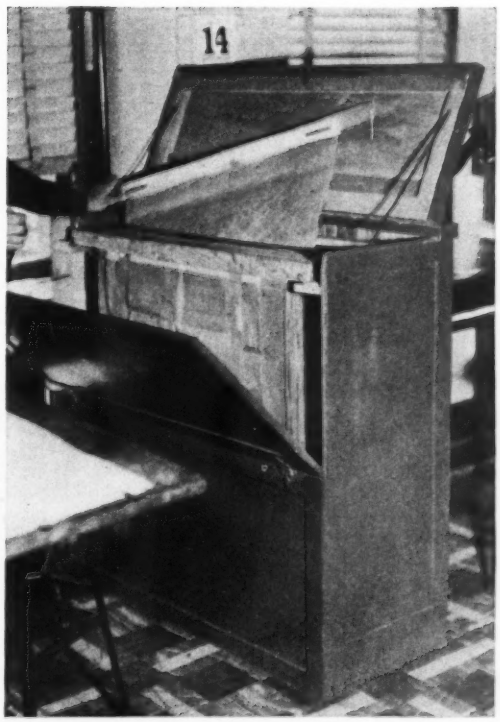


Fig. 1 — Above is shown a light table. Fig. 2—At the right is a file case for plans

FEATURES FITTED TO OFFICE

These are not offered as new items of office equipment. They are interesting because they were worked out for the office in which they are being used and by the ones who are using them. They provided work for one man in this office for a short time during the absence of regular work. The drafting table shown in Fig. 1 is illustrated in more detail in Fig. 3. Working details are given.

The outstanding feature of the

table is the set of electric lights built into it underneath the glass panel. The chief value of this comes in checking tracings against blueprints, in tracing blueprints and in comparing old plans with revised ones. The ease with which it is possible to overlook slight changes in an architect's or engineer's revised drawings does not need any emphasis here. Such oversights are almost impossible when one blueprint is laid upon another and compared. This can be done with the illuminated drafting table shown here. As indicated in the drawing, plate glass is used in the panel. The wood frame will take thumb tacks for securing the drawings in place while working on them. Three 100-watt electric light bulbs are contained in the cabinet space under the glass. The interior of this space is painted a dull white. This reflects the light but eliminates glare. The plate glass is bedded in a mastic cement so as to hold it in place securely. This cement also fills in the crack between the glass and the wood frame, thus providing a smooth surface. It might be pointed out that for general drafting purposes, even when the lights are not necessary, the hard glass surface facilitates drawing work.

The wiring arrangement also is of interest. Note in Fig. 1 that there are four hand switches at the front of the table, located conveniently for the draftsman. As indicated by the wiring diagram, one of these is a master switch which must be turned on before any of the individual light switches becomes effective. Likewise, this one switch will turn off all of the lights which may be turned on by the single switches. After the master switch is closed, the intensity of the light in the cabinet can be controlled, of course, by the number of lights turned on. These individual switches also make it possible to place the light directly under the place where the draftsman is working.

It is obvious that lights of either greater or less intensity than those specified in the drawing may be used. The character of the work done and the personal preferences of the operator would govern in this case.

The method of filing blueprints, as shown in Fig. 2, has several advantages over the old system of rolling them and stuffing them into pigeon holes. In the first place, they are kept free from dust. They are always flat.

NOW IS THE TIME FOR CHANGES

The inconvenience of unrolling and using paper weights when examining the details is eliminated. A place has been provided on the wood binder for labeling the sets of plans with removable cardboard tabs. This makes it easy to locate them. New blueprints may be added to the sets as they come in and old ones may be removed and discarded. With a system such as this, it is almost impossible to lose a plan unless it is torn from the binder. Finally, the job is neat. A heretofore unsightly necessity of every contractor's office has been brought up-to-date. Note that a hasp and lock has been provided for use when it is desired to keep plans safe.

In times like these, it is important that contractors look to their methods of doing business against the time when they are too busy to give this much thought. Such times are not far distant and the contractor who has an up-to-date office both from the standpoint of methods and equipment will have the advantage when general business conditions get back to normal.

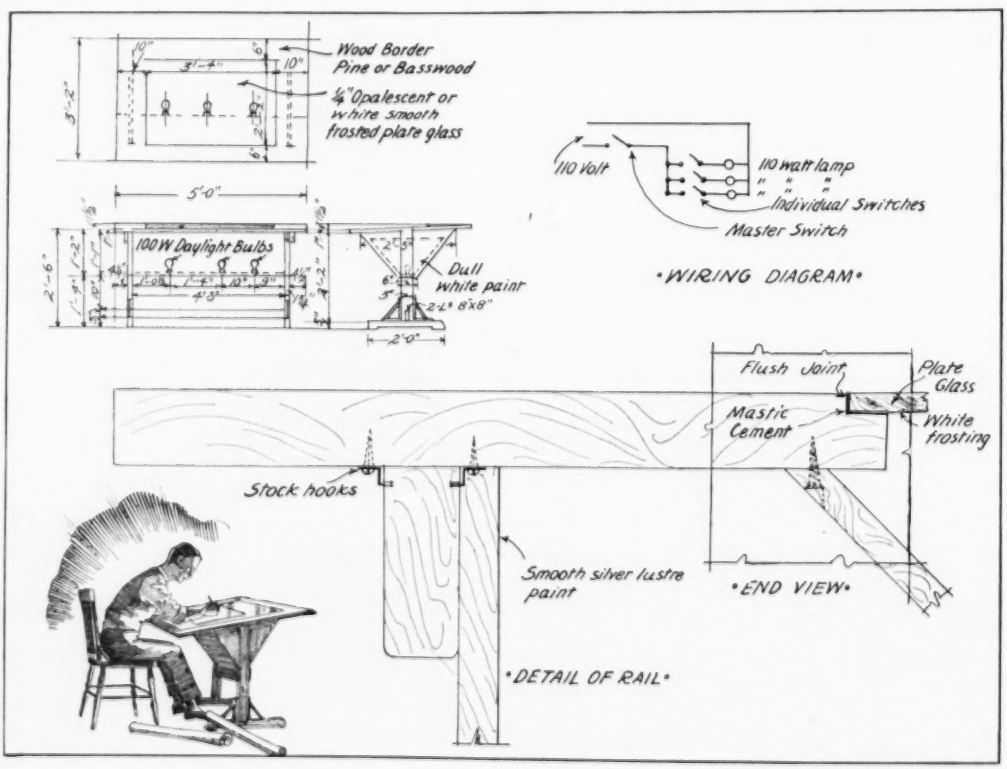


Fig. 3—Here are the details for the construction of the light table. The wiring diagram is included also

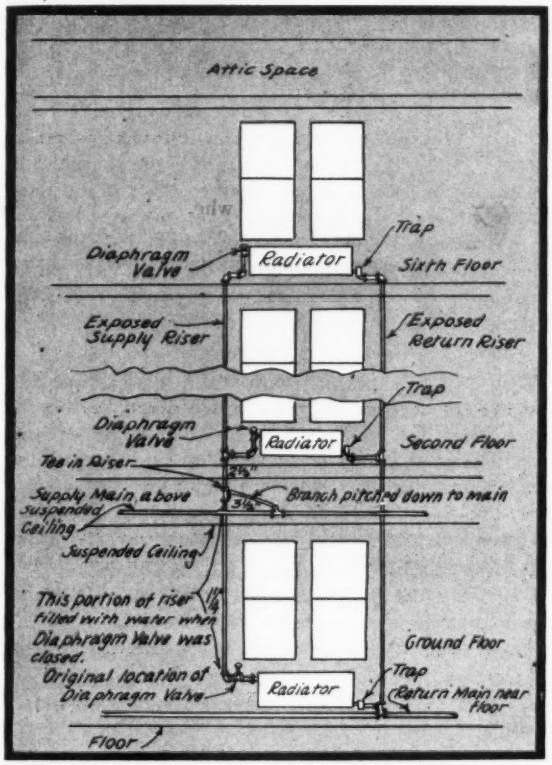


Fig. 1—The piping as it was arranged when the pounding and gurgling occurred is shown at the left

Some people have a nose for news, others have a bent for adventure. Mr. Brown seems to fall into trouble jobs wherever he goes, even during his vacations. This article tells of a very interesting and instructive experience he encountered recently in Wisconsin

Trouble Job Results from Radiator Trap Hook-Up

By EARL BROWN

LAST December I decided to spend Christmas in my old home in northern Wisconsin. A few days before going away I met an architect friend on the street. In the course of our conversation he asked me if I were going away for the holidays, so I told him of my plans to go to Dearborn, Wis.

"Is that your old home town? he said. "I just completed a general office building for the Harris Mining Co. up there."

"I heard about that building but I did not know you built it."

"By the way, I received a letter this morning from the president of that company saying that their heating system is extremely noisy and asking me what can be done about it. He doubts the statement of their maintenance engineer that 'no system can be made to operate quietly.' If you have a little extra time I wonder if you would drop in there to see what is wrong."

"I'll be glad to. I'll have a day or two to loaf and a little something to do may be welcome."

"Just ask for Mr. Muller and tell him that I sent you. I'll write to him tonight telling him that you are coming. When you return be sure to drop in to see me for I'll be anxious to know what's going on."

"I'll see you in about ten days."

When I dropped in to see Mr. Muller in Dearborn, he greeted me very cordially, saying:

"Mr. James, our architect wrote that you were coming to help us out."

"What is your trouble?"

"The heating system in our new office building, which is supposed to be the very latest, heats fine, but the radiators on the ground floor are very noisy. They are especially noisy in mild weather, while during our recent cold snap they made less than half the usual amount of noise. I don't understand it at all."

"Well, let's look around," I suggested, so he and I walked through the whole building.

It was a six story office building, consisting of a ground floor and five upper stories, with no basement under the ground floor. It was heated by a combination up and down feed vacuum system with the supply main between the suspended ceiling of the ground floor and the second floor slab and the return main along the wall near the ground floor. All of the radiators where controlled by a pneumatic system of automatic control with one or two thermostats in every room and a diaphragm valve on every radiator.

We started at the top floor and went down. When we reached the ground floor Mr. Muller said:

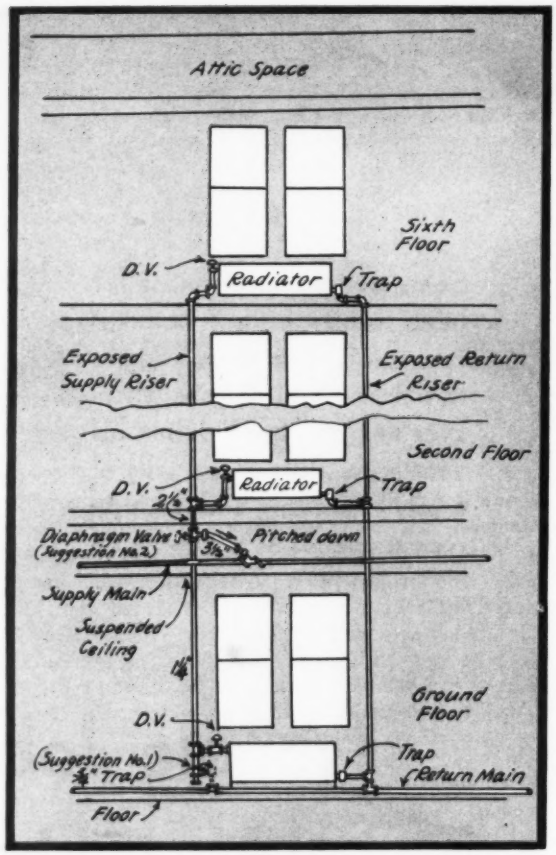


Fig. 2—Two schemes were described and are shown here as Suggestions No. 1 and No. 2

"Here's where we have our trouble. Every once in a while each radiator sounds like a boiler factory. They do not act up all together but first one goes off and then another. On some days the radiators on one wall are the worst and on other days those on another wall make the most racket."

"Just what kind of a noise do they make?"

"It is hard to describe the noise, but it sounds like a lot of water gurgling down a pipe while some one is hitting the pipe with a hammer at the same time. Let's stand here for a minute and I'm sure one of them will go off soon and demonstrate for you."

Sure enough, after we stood there a little while, one of the radiators let loose. The noise lasted about a minute, sounding just about the way Mr. Muller had described it. At the same time the radiator heated all over.

I carefully examined the piping to the ground floor radiators and found it to be arranged as shown in Fig. 1. Before I said anything to Mr. Muller, I crawled into the pipe space above the suspended ceiling on the ground floor and found that the steam was fed to the riser through a tee with the run vertical and the supply branch connected to the side opening as shown in Fig. 1.

When I crawled out of the pipe space I told Mr. Muller that I believed I knew what the trouble was and that if he would call the maintenance engineer I would explain it to both of them.

"I'm sorry," he said, "but the engineer is out of town this week, spending the holidays with his folks in Des Moines."

"In that case, then, I'll explain it to you and you can explain it to him when he returns. "This pipe," I said, pointing to the supply drop from the steam main, "feeds steam to this ground floor radiator whenever the diaphragm valve on the radiator is open. However, you don't need this radiator all the time so the thermostat opens and closes this valve as required to maintain the desired room temperature. When the valve is closed the supply drop fills with water."

"Where does this water come from?"

"Why, this pipe is filled with steam all the time and some of it condenses to water which soon fills up the pipe. When the diaphragm valve opens, all of this water rushes down into the radiator, causing the gurgling noise we just heard. This rushing water is followed closely by the steam and once in a while the steam and water get mixed, causing that sharp banging which we call water hammer."

"I suppose that if this pipe ever filled up all the way the whole piping system would shake to pieces."

"There is no danger of that. As soon as the water level reaches the bottom of the tee the excess water drains back to the supply main through the supply branch."

"I don't see that," he said, so I drew Fig. 3, which seemed to clear up this point.

"There are two possible solutions to your problem, as I see it, Mr. Muller. I'll draw a sketch on which I will show both schemes. Your engineer can use whichever plan he wants." This sketch is shown as Fig. 2. "My first suggestion is to install a trap at the bottom of the supply drop."

"What is a trap?"

"It is an automatic valve that will let out any water which may accumulate in the supply drop, but it will

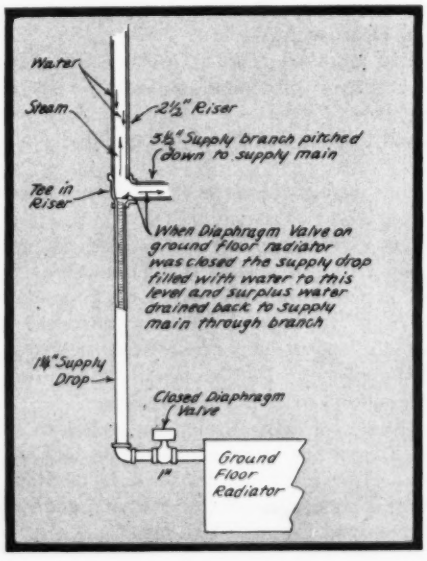

Water
Steam
2½" Riser
3½" Supply branch pitched down to supply main
Tee in Riser
When Diaphragm Valve on ground floor radiator was closed the supply drop filled with water to this level and surplus water drained back to supply main through branch
1¼" Supply Drop
Closed Diaphragm Valve
1"
Ground Floor Radiator

Fig. 3—This detail indicates how the water backed up into the steam supply line when the temperature control valve was closed

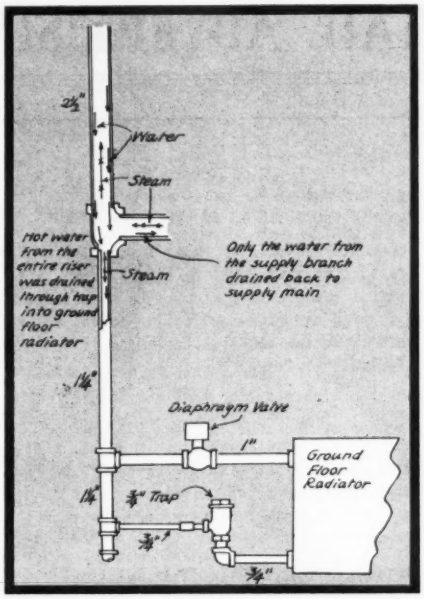


Fig. 4—This detail shows how the radiator was hooked up. In this case, the arrangement was still unsatisfactory

not let the steam through. I suggest that this trap be connected so that the water which passes through it will flow into the return main and back to your vacuum pump. I'll show this arrangement as Suggestion No. 1 on this sketch."

"You'll need only ten traps," I said after counting the supply drops. Does your engineer do welding?"

"Yes, he's a good welder."

"Then he can burn a hole in the return main under each new trap, and weld in the connection."

"What is your other suggestion?"

"It is to move the diaphragm valve to the top of the supply drop so that only an inch or two of water can collect above it. That little won't make any noise." I explained, as I drew Suggestion No. 2 in Fig. 2. "However, if the diaphragm valve is moved up here he will have to take down the supply drop, cut it off, replace it and make a new connection to the radiator. Then he will have to extend the compressed air piping up to the new location of the diaphragm valve. This scheme will work satisfactorily, but I believe the other one will be the least expensive."

"I'll tell our engineer about your suggestions, I'm extremely grateful to you for your help, Mr. Brown."

Upon my return home, I went to see Mr. James to explain to him the cause of the trouble.

"I'm mighty glad we know how to fix it," he said.

I did not hear from this job again until Mr. James called me a few weeks ago.

"Say, Brown, I just received a letter from Mr. Muller up in Dearborn saying that they are still having trouble up there, I'll read you what he says:

Dear Mr. James:

Our engineer made the changes suggested by Mr. Brown. When they were completed the noise no longer occurred but now it seems that the automatic valves on ground floor radiators never close tightly for the radiators never seem to cool off completely. They get about lukewarm, but are never really cool. We did not think much about this until this recent warm weather. We have been having 60 deg. Fahr. weather and the ground floor has been much too warm while the other floors have been quite comfortable. We believe that the difference is due to the fact that the radiators never get cool. What can you suggest?

Your truly,
C. D. Muller.

"What do you think of that?" Mr. James asked me.

"I don't know what to say. I don't understand why those radiators should stay warm. I think the thing to do is to ask them to send you an exact sketch of the changes they made. That may give us a clue."

About a week later Mr. James called and left word that he had received the sketch he asked for so I dropped into his office the next day.

"Here it is," he said as he handed me the sketch. It showed quite plainly that they had used my Suggestion No. 1. However, instead of connecting the discharge side of the trap to the return main as shown in Fig. 2, they had connected it to the radiator tapping, as shown in Fig. 5.

(Continued on Page 66)

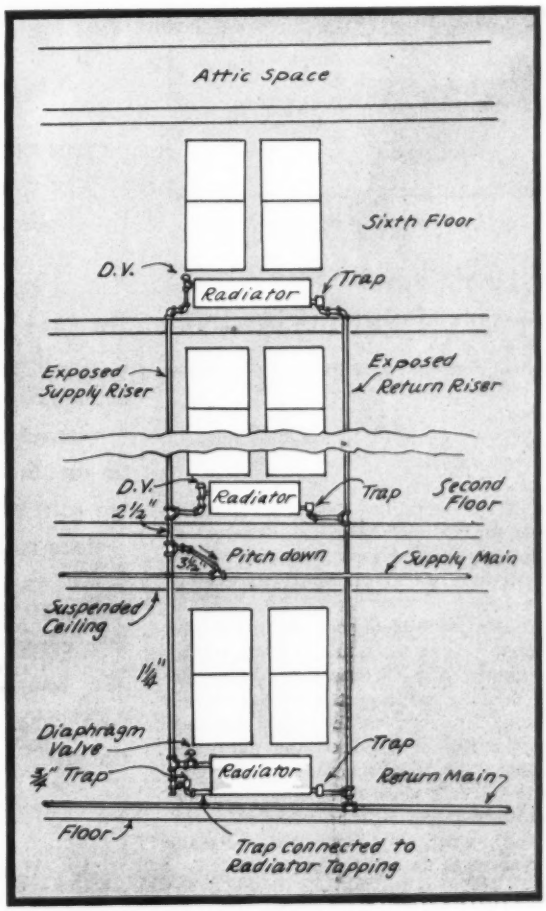
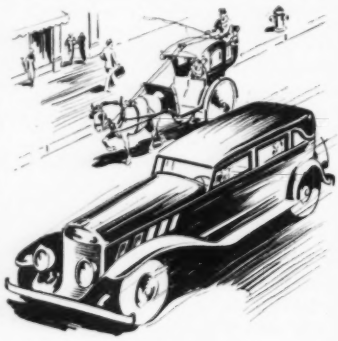


Fig. 5—With these connections, the radiator could not cool because hot condensate discharged through it



Plumbing Fashions Have Changed, Too!

AND if you haven't been in a plumbing store for some time, you'll be pleasantly surprised by the change in fashions. Plumbing furnishings have gone along in step with modern ideas in design, so that, today, the bathroom may show as much smartness in line and color as the living room. If you have a bathroom that is out-dated by the rest of your furnishings, we advise a study of the possibilities it offers for modernization.

(In this space Your Name, Etc.)

A single-column plumbing ad

My dear Madam:

We are all conscious of the great changes in the design of furniture, and in the field of architecture.

It is a constantly surprising thing to me that so few people are aware that in plumbing furnishings there have been as many radical changes in design as in the other fields of home furnishing. You may, today, select a lavatory with as much character and distinction as is possessed by any other piece of furniture in your home. In styling, and in color, these newer fixtures compare favorably with the best of "period" furniture you can buy.

As a matter of fact, the tendency in the design of plumbing fixtures bids fair to make of the bathroom a room of color, beauty and distinction. Lavatories that are dressing tables--with the other fixtures equally rich in design--may now be had.

Perhaps for the coming social season you are planning some changes in the home. I should like to urge that you pay a visit to our display to see just what charming improvements may be made in plumbing arrangements for the comfort and convenience of your guests.

If you will telephone, I'll be very glad to be here at any time that will suit your convenience.

Very truly yours,
HARRY BROWN

A plumbing sales letter

PLUMBING TAKES LEAD IN MODERN STYLING

"If there is anything about which we're conscious these days," says Harry Brown, local plumbing contractor, "it's style. We notice it in our buildings, in our automobiles, in our home furnishings.

"After being in the plumbing business for years, I find myself occasionally surprised to note the great styling changes made in plumbing fixtures in the last five years. Step by step our manufacturers have gone along with the changes in architecture and home furnishings. A bathroom may, today, be as modern as any other room in the house, always with the check imposed by the first demand on the fixtures—utility. For the moment, though, those who haven't been in a plumbing shop for some time will be pleasantly surprised—even as I have been—by the advances in fixture design."

Hand this publicity item to your newspaper

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING —without charge. If you wish to use the illustrations, they are sold at $4.20 for twelve —three months' service.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

A New Day in Plumbing Fixtures

Every care that has gone to modern designing in the fields of architecture and home furnishings has been matched by that which has gone to the designing of modern plumbing fixtures. In the smarter type of home there will be found plumbing furnishings that give to the bathroom an impression of surprising charm, where we have been accustomed to accept utility. A visit to our store will be of interest as indicating the newer fashions in plumbing.

(In this space Your Name, Etc.)

A single-column plumbing ad

SERVICE

My dear Sir:

As winter approaches we urge you to consider one fact only concerning your heating problems: A heating plant that is in good condition saves fuel.

There are a number of ways in which a heating plant may waste fuel because it is inefficient. So-called trouble jobs are far too many in number during the winter period, and of far too great a diversity, for us to cover them in a letter. But it is sufficient to say that we are called throughout the winter to homes where heating plants have finally reached a point where they do not do an adequate job of keeping the house at a comfortable temperature.

That means expense, of course. But it may also mean that for several winter seasons the plant has not been efficient, has been wasting fuel. But not until it is so inefficient as to fail to heat the home does the owner discover these facts.

With this in mind, we urge an inspection of heating plants before they are called on to meet the heavy heating load of the winter months. This we urge particularly, if you have any reason to believe that your heating plant needs attention. Properly cared for, adjusted or modernized as the need may be, you will find it an investment in fuel economy.

If you'll just telephone, I'll be glad to make an appointment at any time convenient to you to go over your heating plant and report its condition to you.

Very truly yours,

HARRY BROWN

A heating sales letter

A DAY OFF FOR THE HEATING PLANT?

"A day off for the heating plant—when the thermometer is 'low' is not something to be welcomed," says Harry Brown, local heating contractor.

"And yet it is just then that a great many people get on the phone and call for help. For this reason, I urge that the heating plant be looked over now, before the heavy heating months are on us. Besides, the matter of fuel economy is one of importance. A heating plant that isn't functioning properly is wasting fuel. Properly adjusted, with any one of the hundred and one things which may contribute to fuel waste eliminated, the home owner can look forward to a winter of comfort, at a reasonable cost.

"If these things are neglected now, the heating plant is going to take a Thursday afternoon off some cold day."

A piece of heating publicity

Catch Old Winter By the Forelock

Before he goes on a rampage, and puts a strain on your heating plant that proves too great for it, make sure that the plant can stand his shock tactics. An inspection now and whatever adjustment may be needed will be worth a great deal in terms of winter comfort, and may contribute materially to the desirable result of a smaller fuel bill.

(In this Space, Your Name, Etc.)

For newspaper ad or blotter copy on heating

Save Money on Winter Fuel

BY having your heating plant—now—put into good condition. A plant which is allowed to run without attention until it actually breaks down, will probably have a long period of waste back of it before it quits work.

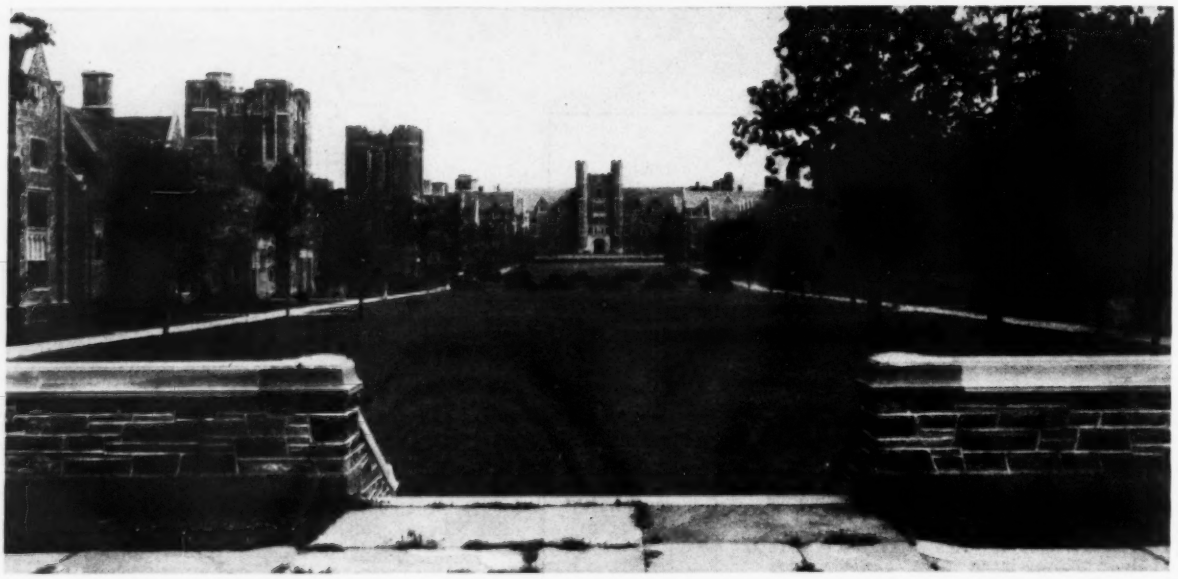
An inspection now, with the adjustments necessary, will assure you of continued heating efficiency this winter, and will cut your fuel costs.

Just telephone. We'll send a competent man to make the inspection and report to you, or to make the necessary adjustments.

(In this space Your Name, Etc.)

A single-column heating ad

Note how the copy on each of these two pages dovetails. The ad copy, the sales letter, the publicity item—in each case they help each other. Use them in your efforts—and send us copies.



By S. M. BARR

Large University Group Is Joined by Plumbing

One set of water heaters has capacity of 9,000 gallons per hour

ONE of the particularly outstanding features of the plumbing system that serves Duke University, is the installation that is found in the Duke Hospital and Medical Building.

This institution is located at Durham, N. C. The grounds comprise approximately 5,100 acres, landscaped in a beautiful manner, and well provided with drainage.

It is a matter of interest that the buildings which comprise Duke University are constructed entirely of stone, and this requirement was so great that the Duke Construction Company purchased a quarry of its own and from this quarry all the stone required has been obtained. This quarry is located not many miles away. The stone taken from it is of six or seven different colorings, and the effect in the completed buildings is very beautiful.

To return now to the main subject of our article, the Duke Hospital and Medical School provides a combination of the practical and of the educational. The structure is the largest of the Duke buildings. Besides providing facilities for a very large medical school, the hospital is equipped for 400 patients.

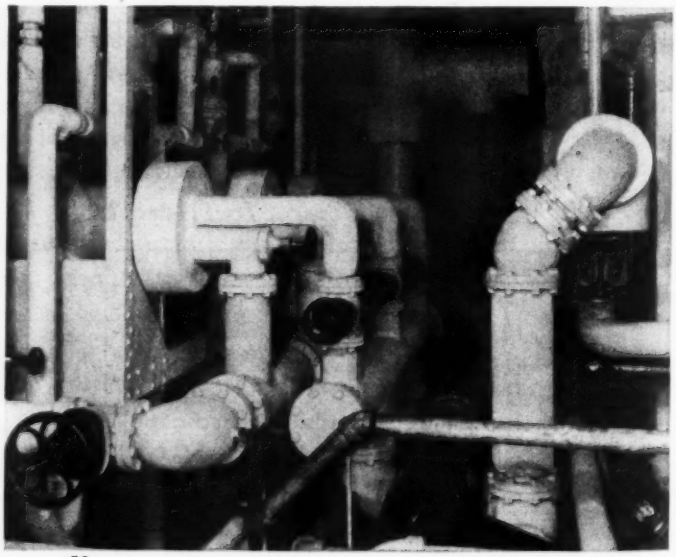


Fig. 2—Here is the battery of three continuous water heating units which together supply 9,000 gallons of hot water per hour. Heating is brought about by steam at 40 lb. per sq. in. pressure

Fig. 1—The hospital and medical building which is considered separately in this article is seen in the center and rear of the view at the left

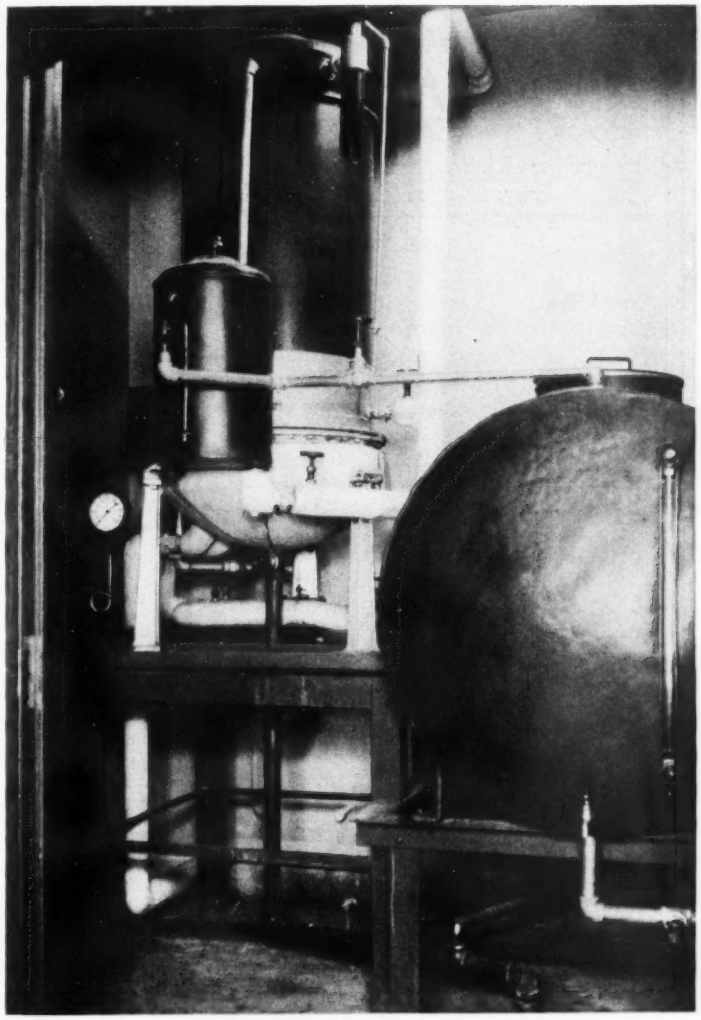


Fig. 3 — The view at the right shows the distilling apparatus which was installed to supply destilled water. It is located on the fourth floor of the hospital and medical building and distribution is by gravity through a separate system

The plumbing equipment, including the hospital and school, includes something like 1,700 fixtures, and the equipment is of the very latest.

The total number of plumbing fixtures in the various buildings of Duke University is 4,154.

In Fig. 1 is shown a group of the university buildings. The Hospital and Medical Building is shown in the center at the far end. This view, however, shows only a small part of the building. We might add, also, that the group of buildings seen in this picture represents only a very small part of the total buildings.

One of the notable features of the plumbing fixture equipment for this building is a small utility sink, made of slate, something like 18 in. by 12 in. by 12 in. deep. This sink is found everywhere throughout the building, and our impression is that there must be two or three hundred of them. They seem to be used in a prodigal manner, wherever there is any need. They are to be found in the laboratories, lecture rooms, operating rooms, doctors' and nurses' rooms, and wherever chemical waste or waste incident to the work of a hospital or medical school is likely to be handled.

Naturally one of the principal plumbing requirements in a hospital building concerns the production of an adequate hot water supply. This requirement has been handled at Duke most effectively.

There is no storage of hot water, but continuous production is a result of a battery of three continuous heating units. These units are shown in Fig. 2.

The capacity is 3,000 gallons per hour for each unit. The water is heated by steam at a pressure of 40 lb.

The hot water generating plant was located in the sub-basement of the building.

DISTILLED WATER SYSTEM INCLUDED

Another principal requirement is a bountiful supply of distilled water, large quantities of which are naturally required in any large hospital.

This requirement has been met by the installation of a large distilling apparatus shown in Fig. 3. This installation was a part of the plumbing contract.

The distilling equipment is located on the fourth floor and distilled water is delivered at points of use by gravity.

In connection with the utility sinks it should be stated that four service lines serve each sink. These services include cold water, hot water, gas and compressed air.

EXTENSIVE DRAINAGE PROVISIONS

The venting for the hospital and medical building is continuous venting. In the case of batteries of water closets, neither circuit nor loop venting was used, individual vents being called for throughout. This is true also of the plumbing for all other buildings.

In Fig. 4 is shown the basement plan for about one-half the area of the building, which will give a clear idea of the extensive drainage layout which serves it. Roughly the extreme dimensions of the building are something like 150 ft. by 240 ft.

A close study of the drainage layout will show that it is divided into three separate systems,—the storm water, the sanitary and the kitchen drainage systems.

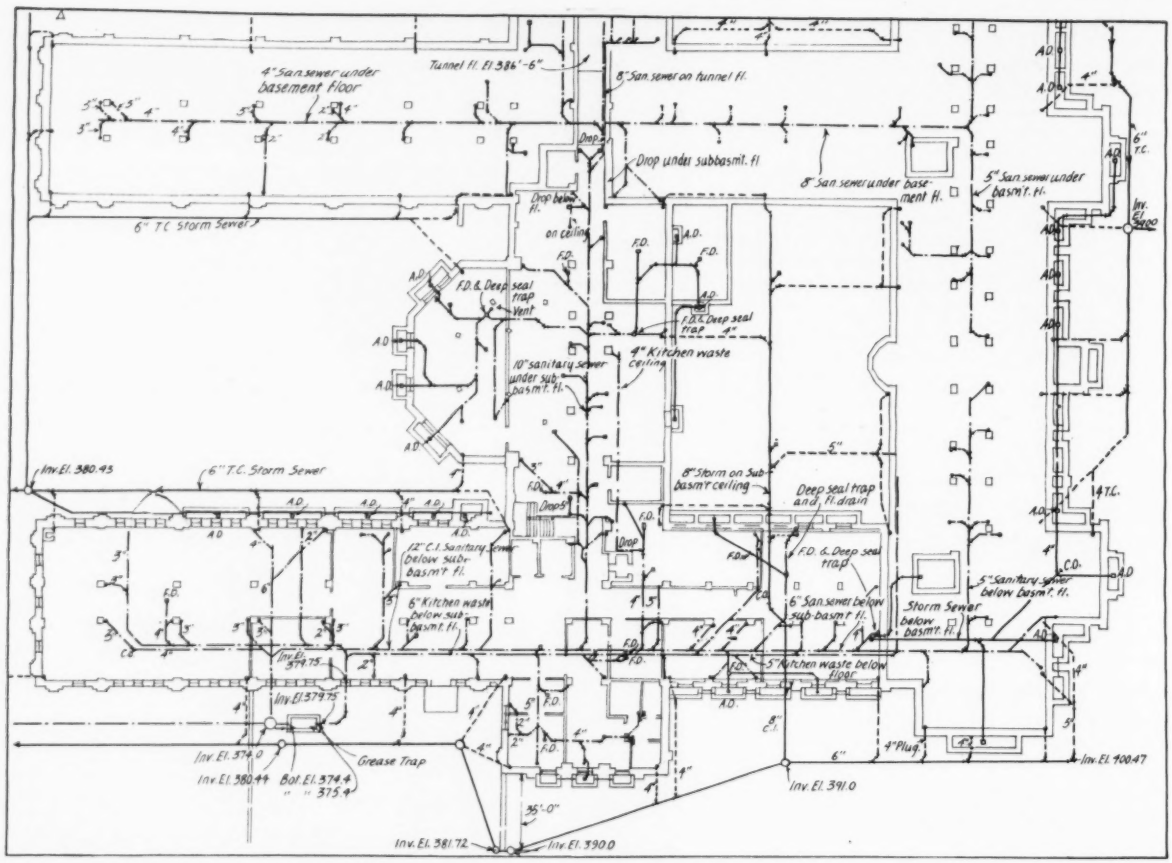

4" San. sewer under basement floor
Tunnel fl. El 386'-6"
8" San. sewer on tunnel fl.
Drop
Drop under subbasmt. fl
8" San. sewer under basement fl.
5" San. sewer under basm't. fl.
Drop below fl.
on ceiling
6" T.C. Storm Sewer
F.D. & Deep seal trap Vent
F.D. & Deep seal trap
4" Kitchen waste ceiling
10" sanitary sewer under sub basm't. fl.
Inv. El. 380.43
6" T.C. Storm Sewer
8" Storm on Sub-basm't ceiling
Deep seal trap and fl. drain
Drops
12" C.I. Sanitary Sewer below sub-basm't. fl.
6" Kitchen waste below sub basm't. fl.
F.D. & Deep seal trap
6" San. sewer below sub-basm't. fl.
Storm Sewer below basm't. fl.
5" Sanitary sewer below basm't. fl.
5" Kitchen waste below floor
Inv. El. 379.75
Inv. El. 379.75
Inv. El. 374.0
Inv. El. 380.44
Bot. El. 374.4
" " 375.4
Grease Trap
4" Plug
Inv. El. 391.0
Inv. El. 400.47
35'-0"
Inv. El. 381.72
Inv. El. 390.0

Fig. 4—This plan shows the various sanitary and storm sewer facilities

The grease trap into which the kitchen waste is carried, is shown at the left, well up, in Fig. 4. Greasy wastes from the various kitchens serving the hospital would naturally be of very considerable volume. This drainage is handled by a 5-in. main which is carried below the basement floor, from which level it drops to a 6-in. main carried below the sub-basement floor. From the grease trap the kitchen wastes are carried into the main sanitary house sewer.

The sanitary drainage layout shown in Fig. 4 shows the principal horizontal lines below the basement floor and below the sub-basement floor. The basement floor main is 8 in. in diameter, and drops to the sub-basement floor into a 10-in. line, which in turn enters the 12-in. main sanitary line.

The storm water system, which is also very extensive, is entirely separate from the sanitary system. There are two main storm water lines in Fig. 4, each 12 in. in diameter, and into each several 6-in. mains discharge.

SEPARATE SYSTEMS FOR ACIDS

In the other half of the building, which is not shown in Fig. 4, two other 12-in. storm water lines are used to serve that part of the building.

Also in the other part of the building, there is a separate system of drainage for the handling of acid wastes.

This service is of sufficient extent to call for a 6-in. main. This entire system, including main branches, wastes, traps and fixtures is of material, which is resistant against the corrosive action of acids.

Before entering the main sanitary line, the acid wastes first discharge into a neutralizing tank, and from there the deactivated effluent discharges to the sanitary system. The storm water system uses terra cotta piping.

In Fig. 4 the storm water system is shown by solid lines, and the sanitary and kitchen waste lines by dot-and-dash lines.

PASSAGEWAY CARRIES ALL PIPE

An underground utility passageway carries all pipe lines serving the various mechanical installations, such as plumbing, heating, gas, electricity, compressed air, etc. This passageway follows the foundation lines of the entire building layout of the university and is of such size that an automobile might be driven through it if there were not the pipe lines to obstruct.

One can scarcely realize what a tremendous undertaking the constructing of this passageway was, unless he can see for himself the hugeness of the Duke building plan.

All of the many buildings are connecting, practically under one roof, and this underground passageway makes the entire circuit. No doubt the great expense of this thing is justified, for it certainly reduces the oversight, repairs, etc., for the entire plant to a minimum.

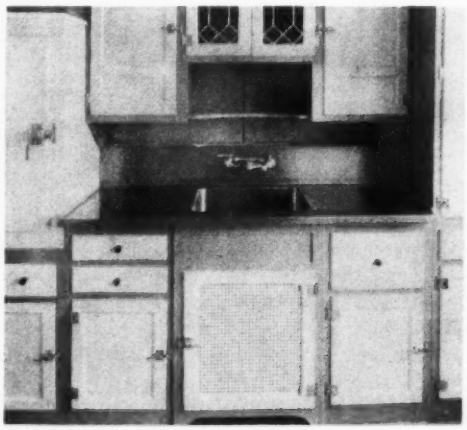
ITEMS FOR STORE, SHOP AND JOB

Readers will find in this department news of our industry's progress in the manufacture of equipment. You can read of the efforts of manufacturers to develop products which will increase customer demand, will make shop methods more efficient and will simplify installation.

The fall upturn can be increased by taking advantage of the natural appeal which is contained in the many new products just recently made available on the market. Among the following items, you will find products which have been chosen as being particularly adapted to these requirements.

Monel Metal Sinks for Cabinets

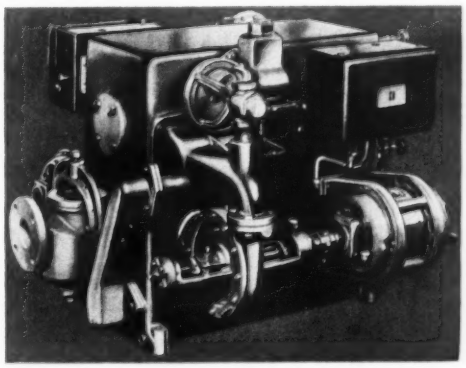
A line of monel metal sinks for cabinets, which is represented by the accompanying illustration, has just been placed on the market. The line has been designed



exclusively for use with cabinets, and is to be sold and installed by the plumbing contractor after the cabinet has been installed. The drain boards are re-enforced with heavy plate and the under-portions, including the bowl and drainboard are sound deadened. The sizes of the double drainboard models range from 60 to 117 in. in length. The single drainboard models are 48 in. and they are furnished in right and left hand types. All models are 25 inches wide, designed to permit a slight over-hang. The integral back splash is 1½ in. high and an optional back splasher is provided which is designed to form a tight overlapping joint when bolted to the smaller back splash. The bowls are of solid one piece construction and are welded to the adjacent drainboards. International Nickel Co., Inc., 67 Wall Street, New York City is the manufacturer.

Line of Vacuum Pumps Announced

The accompanying illustration represents a line of vacuum pumps which has just been improved and placed on the market. The receiver is rectangular and is of cast iron construction. The motors are of standard make to permit quick replacement when necessary. All of the



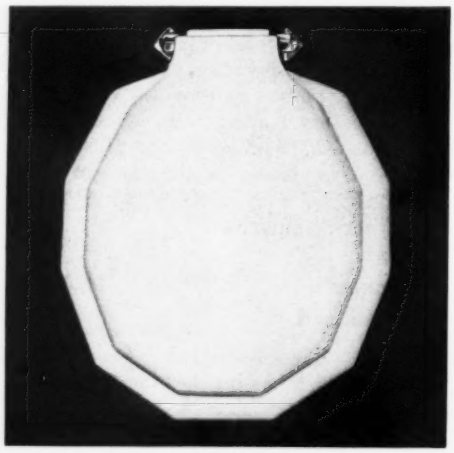
pump parts have been designed to be readily accessible. The pump is for the purpose of removing both air and water from return lines. The manufacturer is Hoffman Specialty Co., Waterbury, Conn.

A New Vacuum Air Valve

The vacuum air valve which is described here has just been placed on the market. It is described as being two valves in one: a venting valve and a vacuum valve in

Items covering new automatic heat and air conditioning products will be found, beginning on page 99, in the Automatic Heat and Air Conditioning Dealer section.

the same shell, yet operating independently of each other. The valve is designed to first vent all air from the system and to close the instant the radiators become filled with steam. This action is accomplished in the lower or venting section of the valve. The vacuum bellows, designed to function on a fraction of an ounce of pressure, is pushed downward by the outside atmospheric pressure to seal the valve against the return of air. The manufacturer of this item is W. A. Russell & Company, Grand Central Terminal Bldg., New York City.

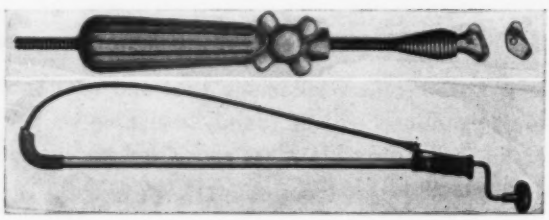


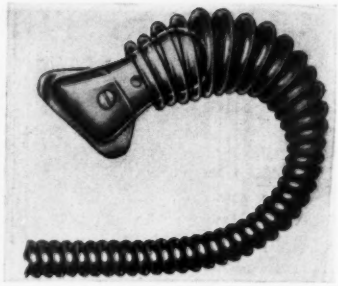
A New Seat for Water Closets

The accompanying illustration shows a seat which has just been placed on the market. It is of the seamless type and is available in white or in colors. Consideration has been given to the merchandising of the item after tests made with wholesalers and retailers with the result that it is packaged in a self-contained display box and is being offered on the basis of its quality. The manufacturer is Standard Tank and Seat Company located at 308 N. Front st., Camden, N. J.

Drain Cleaning Tools with New Features

The accompanying illustrations show tools which have been designed for cleaning stoppages in drain pipes and in closet bowls. The enlarged view shows the details of the cutting tool on the end of the drain augers. The knife is removable for sharpening and is made so as to climb through fittings. The handle of the drain auger is metal and the hole in it is wedge-shaped so that when the set screw is tightened on the coil, contacts are made at three points. The closet bowl auger has a hollow metal handle. The left hand grip may be turned to suit the convenience of the operator. By pulling up the handle, the coil is drawn into the body of the tool. The heel of the tool has a rubber cover to protect the closet bowl. When not in use, the end of the coil is hooked onto the grip of the tool. The waste rod comes in 3/8-in., 5/16-in. and 1/4-in. sizes, the idea being to fit the tool to the different services required. The tools are manufactured by Sanger Steel Products, Park Ridge, Ill.





Water System Contained in Tank

There has just been placed on the market a water supply system, the tank of which contains the entire pumping mechanism. The motor also is entirely enclosed within the tank and the electric connections are made through special air tight terminals. Another feature which is listed is that this system has an air volume control which has been designed to function even when there is a positive suction head, which means that the water supply is higher than the supply of water in the tank. This air volume control is made to be fully automatic in that the ball float actuates a small arm admitting pressure from the tank into the diaphragm check, which, in turn, completely shuts off the supply of incoming water and enables the pump to draw its air through a special air valve in the air volume control fitting. The unit is said to be suitable for booster service, where it is merely desired to increase the pressure in the water supply, as well as for use as an original water system where the water is drawn by suction. The tank has a capacity of 25 gallons. The rating of the unit is 400 gallons per hour. The maker is Decatur Pump Company, Decatur, Ill.

A Replacement Handle for Fixtures

There has just been placed on the market a handle which is shown in the accompanying illustration. It is for replacing broken handles on basin, bath and lavatory

CONSTRUCTED OF COPPER AND BRONZE THROUGHOUT

Select the pump that suits the particular conditions . . . .
Don't try to suit the conditions to a particular pump

PENBERTHY PRODUCTS

PENBERTHY SUMP PUMPS

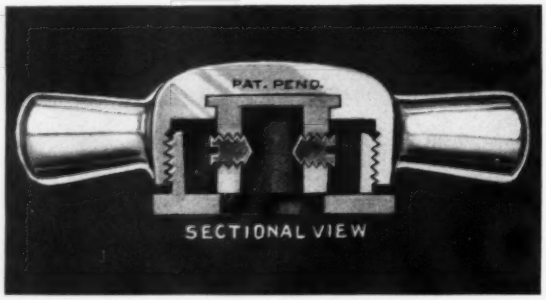
PENBERTHY INJECTOR COMPANY · DETROIT

Established in 1886

Canadian Plant Windsor, Ont.

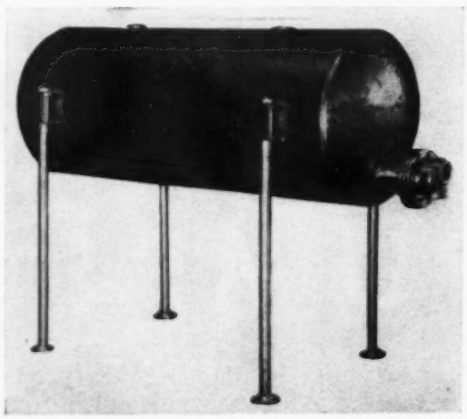
NO. 1K	NO. 2K	NO. 3K	NO. 4K	NO. 5K
$65 LIST	$85 LIST	$100 LIST	$125 LIST	$150 LIST
Max. Sump Depth 2 ft.	Max. Sump Depth 3 ft.	Max. Sump Depth 4 ft	Max. Sump Depth 6½ ft.	Max. Sump Depth 8½ ft.

fixtures. It has been designed to fit all stems. The cross sectional view indicates how the set screws compensate for the various sizes of stems. When assembled, no screws are visible. The manufacturer is the Pilgrim Brass Works, located at 146 Tyler St., Boston, Mass.



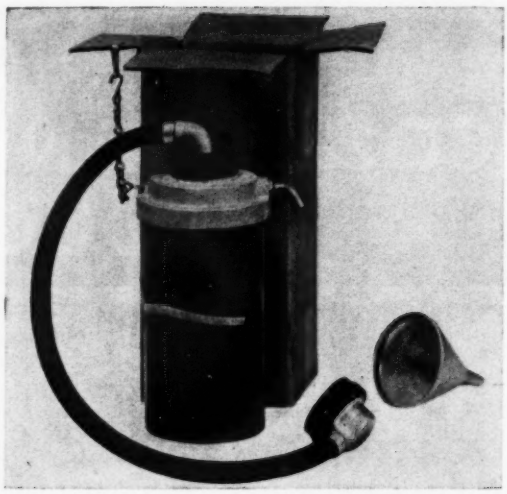
A Domestic Water Heater Combination

The domestic water heater combination which is shown here has just recently been adapted for installation where boilers are fired by gas, oil or automatic stokers. It has been designed to furnish domestic hot water in residences. A removable heating coil is shown located at the bottom of the tank. The tank is fitted with four welded lugs designed to assist the installer in erecting the tank on its pipe stand. L. O. Koven & Brother, Inc., 154 Ogden Ave., Jersey City, N. J., makes it.



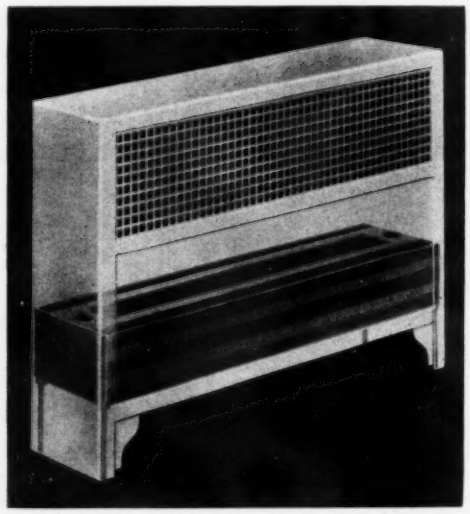
A Small Water Softening Unit

An announcement has been made of a small water softening unit which has been placed on the market for use in homes. The unit is hung from a hook so that it is alongside a water faucet. The rubber hose is connected to the outlet of the faucet and the hard water is forced to circulate through a bed of water softening mineral contained in the unit. When the mineral becomes loaded with hardness, it can be reactivated by passing through it a solution of common salt. Miracle Manufacturing Corp., Fort Wayne, Ind., makes it.



A Finned Cast Iron Radiator

The radiating unit which is shown here has just been placed on the market. It is made of cast iron in one piece, for use with an enclosure. The fins are cast with the unit. The item comes in a wide variety of sizes and widths and is designed for use with all types of heating systems including hot water and one pipe steam. In certain cases, it can be partially recessed in an inner wall. The manufacturer is the United States Radiator Corporation, located at Detroit, Mich.

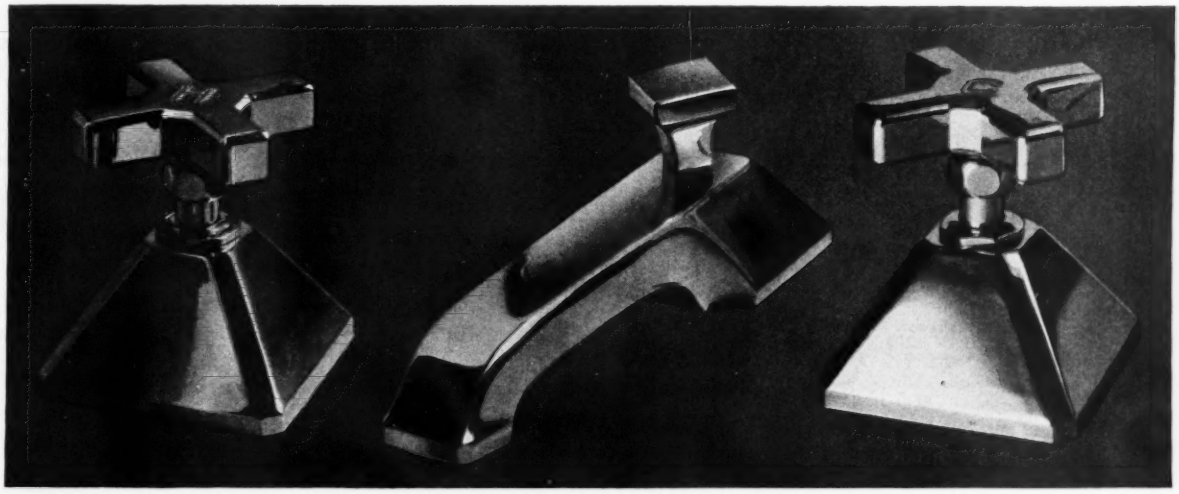


Tool Designed for Reseating Faucets

The tools which are shown here have been designed for making possible the installation of new seats in faucets. It will be noted that the set contains a tapered guide which is wedged into the body of the faucet for centering the reaming and tapping tool. The ratchet wrench is used in turning the tap which is described as being a combination self-feeding, reaming and thread-

VOGUE FITTINGS BY SCOVILL

Match Fixtures New or Old



THE VOGUE line has been designed expressly to help you sell modernization and replacement work. Now, though building is practically at a standstill, jobs of this sort offer immediate opportunities for business.

Vogue fittings are modern but not extreme. Modern—to match the newest enamelware fixtures, and create complete up-to-date installations. Not extreme—to match the old-type fixtures, and bring new efficiency and smartness to the bathroom equipment. This adaptability of the Vogue design enables you to sell customers who can afford only partial replacement, as well as those who can afford complete jobs. In other words, this single line covers the entire range of your modernization market.

Let the new Vogue fittings help build business for you. The line includes all parts for the lavatory, bath and shower. Every fitting is backed by the Scovill reputation for quality and service, established during 130 years in business. Scovill brass goods are long-wearing, trouble-free, constructed to meet practical plumbing requirements. Roughing-in dimensions are standard. Installations quick and easy.

It will pay you to know more about the new Vogue line. A booklet, containing complete information and illustrations for ready reference, will be sent on request. Write for it today.

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION
WATERVILLE . CONNECTICUT

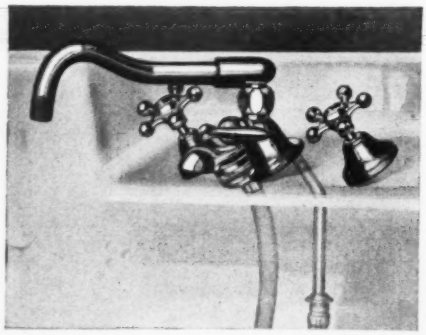
Flush Valves—Shower and Bath Fixtures—Tubular and Miscellaneous Plumbers' Brass Goods for General Plumbing Requirements

Scovill

VOGUE

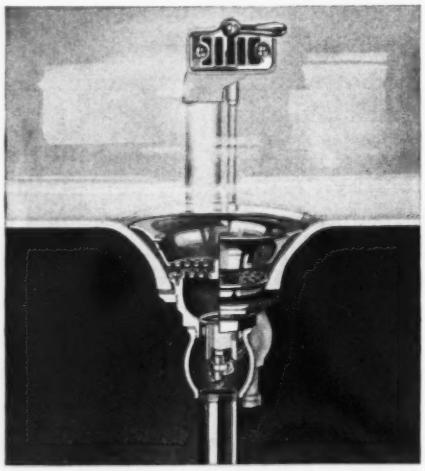
Protected by U. S. Design Patent No. 86672—others pending.

Wherever a new sink is needed it's *easier to sell the Corwith* . . .

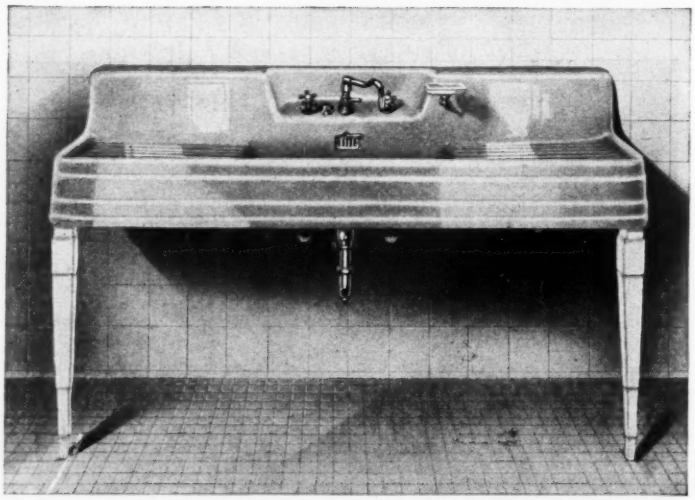


C 32840-D supply fixture. In this *Corwith* sink the tapered recess makes the supply fittings convenient yet out of the way. The hose slips into a slot in the recess when it is not in use. Water can be supplied to the spout or spray by a transfer valve. The spray is adjusted so that it will always be directed downwards. The supply fittings are sturdily constructed with heavy, full ½" concealed valves, with renewable seats, and with stem threads in the center piece. All parts subject to wear are renewable from the front.

•



C 19780 Pop-Up waste and overflow. The *Corwith* is the only sink fitted with an overflow. This holds a marked advantage, since it enables grease to drain off as it rises and insures constantly clean dish-water. It has an extra large *Dual* strainer, 7" in diameter, which acts as an efficient catch-all. The surfaces around this waste are enameled for easy cleaning. The pop-up waste is operated by a lever directly above the overflow.



Corwith sink C-19168-PA. This *Corwith* sink is an exclusive, patented Crane design. Its lines are the most modern known to plumbing and with them it combines an unusual degree of utility. While moderately priced, this sink is recommended for the finest homes and apartments as well as for hospitals, institutions, and schools. It is made of durable, easily cleaned enamelware, regular or acid-resisting, and can be furnished in white or any of 12 colors. It has an extra wide box back, 8" high, which provides room for cleaning utensils, glasses, etc.; its apron is 8" and its exceptionally large sink compartment is 8" deep. *Corwith* sinks are furnished in sizes 74" x 24" and 60" x 24", double-drainboard style and 52" x 24" single drainboard style.

•

IT'S natural that the first place women want modern plumbing is in the kitchen. It's equally natural that among all regular sinks the one for which they show the greatest preference is the *Corwith.*

For today, when appearance and convenience must go hand in hand with economy, this *Corwith* sink has an undeniable claim to the smartest design in plumbing. It can show conveniences which outrival those of any regular sink at any price. This, plus the fact that its low price tag can be further broken up into 24 small monthly payments, explains why it is easier to sell the *Corwith* in any home where a new sink is needed.

The time has come . . .

so has the opportunity

AND HERE ARE THE MATERIALS!

THE corner has been turned, say economists. This fall is the time to identify yourself with the new complete Crane line to meet new conditions.

Because heating contractors who handle Crane materials will find themselves in the position to compete with everyone on every job . . . and yet be a step ahead of competition from anyone else.

They will be selling materials and making profits on bids based on 1913 levels. But the materials will be more modern than any others in heating today. They will have the advantage of a name whose prestige is unchallenged. Most important of all, they'll have features to sell which are obtainable nowhere else.

Square and round boilers showing 51 distinct advantages of dependability, economy, or convenience. Radiators—the only ones obtainable with integral shields — that will put the heat where it belongs in the room, reduce fuel consumption, and eliminate wall smudge. They'll have valves, fittings, speed heaters, humidifying radiators that offer the extra values of Crane engineering, of Crane improvements.

No. 226 Radiator Valve

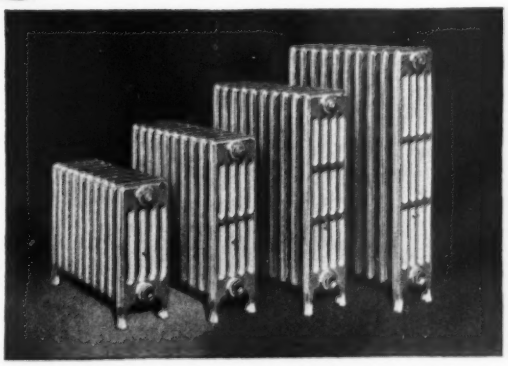
The time to identify yourself with this new, complete, and better line has come. The time to start working on the jobs it will open for you is now. So don't put off getting full information any longer. See your Crane Branch manager today.

•

This Crane square boiler offers 27 distinct advantages over other square boilers.

•

Crane radiators feature the new slender and efficient lacy columns.

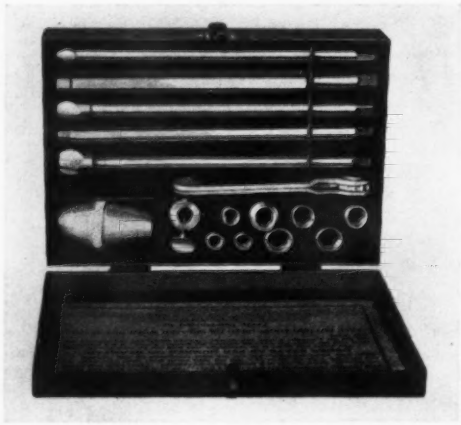


CRANE

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVENUE, CHICAGO NEW YORK: 23 WEST 44TH STREET

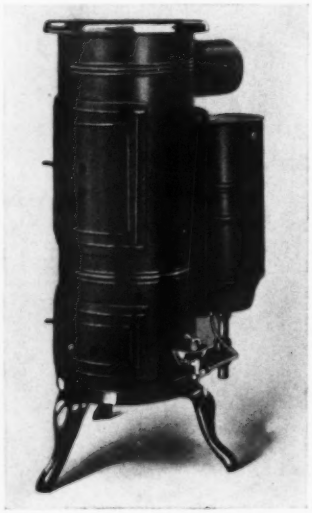
Branches and Sales Offices in One Hundred and Sixty Cities

ing tool. When the faucet is prepared, a seat is screwed into the tapped hole. The tools are made for reseating globe valves, ball cocks, and barrel faucets. The manufacturer is The Saver Reseat Tool Company, located at 2035 Charleston St., Chicago.



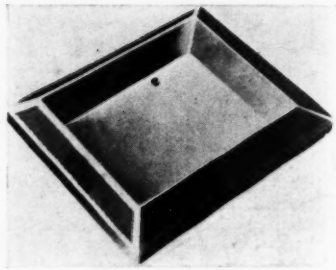
An Oil Burning Space Heater

Here is an oil burning space heater which has just been placed on the market and which is a self-contained unit. The burner and oil supply are built into the heater at the factory. The sizes have a capacity range from 2,000 to 7,000 cubic feet of room space with an oil supply range of from 2 to 6 gallons. It is made by Taft Oil Burner Co., of 895 Boylston St., Boston, Mass.



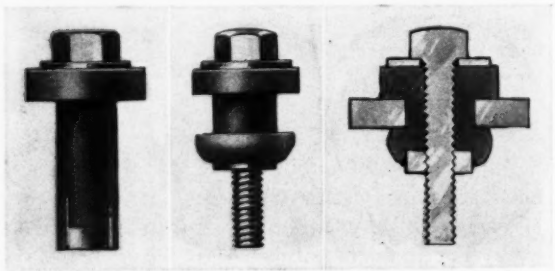
Foot Bath for Locker Rooms

The primary purpose of the foot bath which is shown here is for use in locker rooms of schools, gymnasiums, clubs and colleges. It is made of hard rubber so as to be unaffected by solutions which may be used in the foot bath. It is described as having sales possibilities for private and individual use in connection with bath room or shower equipment. Eldridge - Northrop, Inc., 219 E. Hanover st., Trenton, N. J., is the manufacturer.



Metal Repair Plug

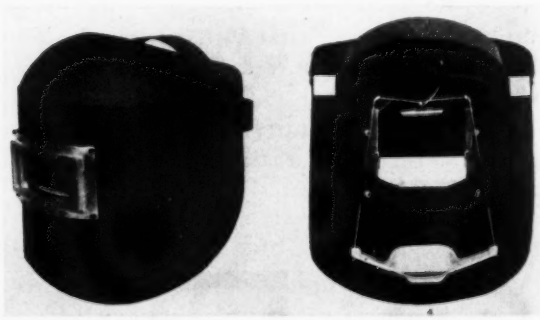
The accompanying illustrations show how the repair plug in question is operated to repair rust or sand holes in water tanks, range boilers, and similar equipment. The view at the left shows the plug in its original form,



the center view shows it after the bolt has been drawn up and the right hand view shows how the soft metal is compressed to fill a hole and stop the leak. The entire plug is made of metal. The manufacturer of this item is Foss Repair Plug Co., located at 4725 Chicago Ave., Minneapolis, Minn.

A Head Shield for Welding

This item has to do with a head shield which has been placed on the market just recently. Its purpose is to permit the welding operator to view his work without the necessity of raising the shield and to allow him the use of both hands at all times. By merely opening his



mouth, the operator raises the dark glass which shields him from the glare of the arc. Both an exterior and interior view of the shield showing the device for doing this is reproduced here. The Lincoln Electric Co., 12818 Coit Road, Cleveland, Ohio, is the manufacturer.

The Winter Season...
AN OPEN MARKET FOR
White Toilet Seats

No. 909

Open Front Colonial Seat for regular standard size bowl, 5½ inch between hinge post holes. Furnished in white, orchid, canary, yellow, green, pink, rose, ivory, blue and gray. Cast brass, chrome plated hinges with one-half inch bar made from eighteen gauge brass tubing.

The COLONIAL *Open Front Seat*

WHITE SEATS as an outstanding profit possibility as the winter season threatens is out of keeping with the ordinary state of conditions, but the Colonial Line of White Toilet Seats, priced at just a few cents more than the ordinary oak or mahogany seats, are creating a lively action in the toilet seat market at this time.

The fact that it is possible for the home-owner to purchase a white toilet seat with its many times greater popular demand, at possibly the cost of a couple of good cigars more than the regular oak or mahogany seat, is causing a buying action that is most encouraging to plumbing contractors.

When you are called on for repair or remodeling work, take along a Colonial White Seat. Watch the indication of surprise when the home-owner is advised of the cost of this glistening, durable, well finished white seat. Such an extremely low price for a seat of such quality and reputation is the reason why so many plumbing contractors are profiting on the Colonial Line, taking advantage of their calls into homes at this time of the year to push the sales of these seats.

Ask your jobber or write us for full information. There are profits for everybody with the Colonial low priced, high quality White Toilet Seat.

CHAS. A. MILLER CO. : STURGIS, MICHIGAN

The Reason for the New Lead Pipe Size Standards

By F. E. WORMSER

THE Lead Industries Association has approved a new standard of lead pipe sizes which is being adopted by the principal manufacturers as an aid to consumers. In addition to eliminating numerous variations in pipe sizes now found among lead pipe manufacturers, an outstanding feature of the new standard is that all sizes of lead pipe in the A, AA and AAA classifications, (or "Strong," "Extra Strong" and "Double Extra Strong") will safely withstand constant cold water pressures of 50, 75 and 100 lb. per sq. in., respectively. Heretofore the safe working pressure of these classes of lead pipe has decreased as the diameter of the pipe has increased. The principal changes occur in diameters of 1 in. to 2 in. Alterations made in sizes below 1 in. are of minor importance and small in number but have been made to introduce a uniformity which does not now exist among the lead pipe sizes of various manufacturers. The new standard is given in detail in the accompanying table.

The desirability of standardizing lead pipe sizes was first brought to the attention of the Lead Industries Association several years ago through the puzzling failure of several lead service pipes in the East to withstand pressures which all the information at hand indicated to be well within the bursting strength of the lead services. This was specially true of 1½ in. and 2 in. and larger sizes of lead pipe.

CAUSES OF FAILURES IN PIPE

The lead pipe would expand to 50 or 100 per cent of its diameter and then burst. Investigation disclosed that many municipalities had increased substantially the water pressures in the mains. Moreover, water hammer, in some installations, was adding greatly to the constant pressure which the pipe was expected to hold. Modern conditions were making it necessary to examine carefully the design of our product.

We then undertook some fundamental laboratory research to ascertain the unit stress to which lead might

CELL-O-TONE

CELL-O-TONE brings you maximum efficiency in a low pressure covering—at a competitive price.

Its superior construction introducing time-saving features, materially lessens the time required for application when compared with other coverings of this type.

CELL-O-TONE is manufactured by modern methods, on modern machinery, and receives the careful attention and inspection of expert craftsmen from the selection of its asbestos fibres and binders on thru its manufacturing process of paper making and corrugating to the final stage of drying.

Every piece of CELL-O-TONE leaves our factory at Norristown, Pa., carefully packed in sturdy cartons which protect the covering against crushing and broken ends, and insures you the delivery of clean, whole material.

Make it a point to become better acquainted with CELL-O-TONE, the greatest radical improvement in the pipe covering industry in 30 years.

Send for Free Descriptive Folder

Technical Improvements in
CELL-O-TONE

1. One piece construction—heavy asbestos felt outer casing, hinged at bottom to permit speedy application.
2. No canvas jacket. The absence of paste used in applying canvas jackets makes CELL-O-TONE vermin and rodent proof, as well as fire proof.
3. Corrugations are shaped like a "Roman Arch" giving maximum strength.
4. Outer casing is toned a pleasing hue—no painting nor other treatment is necessary.
5. Extra wide black lacquered bands for fastening, conceal as well as secure abutting joints.
6. At no point around the covering is CELL-O-TONE thinner than indicated by its ply thickness.

NORRISTOWN
MAGNESIA & ASBESTOS CO.
NORRISTOWN - - - - - - - PENNSYLVANIA

CELL-O-TONE INSULATION AS MANUFACTURED BY

be put without yielding and found that the effective stress was between 200 and 250 lb. per sq. in., much lower, I believe, than most people appreciate. The old standards so far as we could ascertain had been established by taking the quick test bursting strength of lead —about 1800 lb. per sq. in.—and dividing it by a factor of safety of 3 or 4 to give a unit stress of 600 or 450 lb. per sq. in., which you can see is much higher than the allowable creep strength as indicated by laboratory experiments. In other words, our laboratory work showed us that lead pipe in the larger sizes had not been designed carefully enough to withstand modern conditions.

RELATION TO VARYING SIZES

Furthermore, in the old standard there was no relation between the various classes of lead pipe with respect to the varying sizes. For example, 1 in. AA pipe was much stronger than 2 in. AA pipe and ½ in. AA pipe was even stronger than 1 in. Similarly for the other classes. Plumbers and other users of lead pipe were undoubtedly misled on occasion by assuming that all AA pipe, for example, could withstand the same pressures.

Then again there were slight discrepancies here and there among various sizes of lead pipe produced by manufacturers in the East and the West. In order to clear up the whole situation it was decided that lead pipe of the A, or strong weights, should be designed safely to carry 50 lb. per sq. in. under constant load; in like manner AA pipe, 75 lb.; and AAA pipe 100 lb. per sq. inch. This made it necessary to redesign the pipes having a diameter of 1 in. or more and, to be specific, the sizes shown below have been redesigned.

In this table, the numbers in parentheses at the extreme right hand column refer to the old weights as used by most lead pipe manufacturers. You can therefore see that the important changes all occur in the weights heavier than 1 in., changes below 1¼ in. have been minor; in fact most of the weights were not changed.

Inasmuch as the great bulk of the pipe sold for plumbing purposes is below 1 in. the change in the standard has not affected more than a small quantity of the tonnage sold per year, but, hereafter, when a plumber specifies a ½ in. or 2 in. AA pipe, or any other size, to withstand 75 lb., he can be sure that it will do so under normal conditions. Plumbers need no longer consult a lead table to determine the safe working pressures of the three commonest classes of lead pipe.

STANDARDS ARE REPRESENTATIVE

The lead pipe manufacturers represented in the Lead Industries Association account roughly for 90 to 95 per cent of the domestic output and all participated in the deliberations or correspondence which led up to the adoption of the new standard, and unanimously approved it.

A New Lead Pipe Standard

Size Inside Diameter In.	Classification		Outside Diameter In.	Weight per Ft. New		Weight per Ft. Old	Size Inside Diameter In.	Classification		Outside Diameter In.	Weight per Ft. New		Weight per Ft. Old
	East	West		Lb.	Oz.	Lb. Oz.		East	West		Lb.	Oz.	Lb. Oz.
⅛	E	AQ	.520	.....	8	(7)		D	XL	1.486	2	8	.....
	D	XL	.549	.....	10	.....		C	L	1.528	3	.....	.....
	C	L	.577	.....	12	.....		B	M	1.592	3	12	.....
	B	M	.631	1	.....	.....		A	S	1.670	4	12	.....
	A	S	.725	1	8	(1-4)		AA	XS	1.765	6	.....	(5-12)
	AA	XS	.811	2	.....	(1-8)		AAA	XXS	1.889	7	12	(6-12)
	AAA	XXS	.888	2	8	(1-12)	1½	E	AQ	1.740	3	.....	.....
¼	E	AQ	.628	.....	9	.....		D	XL	1.776	3	8	.....
	D	XL	.666	.....	12	.....		C	L	1.830	4	4	.....
	C	L	.712	1	.....	.....		B	M	1.882	5	.....	.....
	B	M	.756	1	4	.....		A	S	1.984	6	8	.....
	A	S	.798	1	8	(1-12)		AA	XS	2.076	8	.....	(7-8)
	AA	XS	.876	2	.....	.....		AAA	XXS	2.272	11	4	(8-8)
	AAA	XXS	1.012	3	.....	.....	1¾	D	XL	2.024	4	.....	.....
⅜	E	AQ	.765	.....	12	.....		C	L	2.086	5	.....	.....
	D	XL	.803	1	.....	.....		B	M	2.146	6	.....	.....
	C	L	.881	1	8	.....		A	S	2.193	6	12	(7-0)
	B	M	.953	2	.....	.....		AA	XS	2.404	10	8	(8-8)
	A	S	1.019	2	8	.....		AAA	XXS	2.624	14	12	(10-0)
	AA	XS	1.082	3	.....	(2-12)	2	E	AQ	2.185	3	.....	.....
	AAA	XXS	1.137	3	8	.....		D	XL	2.284	4	12	.....
½	E	AQ	.906	1	.....	.....		C	L	2.354	6	.....	.....
	D	XL	.940	1	4	.....		B	M	2.410	7	.....	.....
	C	L	1.006	1	12	.....		A	S	2.503	8	12	(8-0)
	B	M	1.068	2	4	.....		AA	XS	2.751	13	12	(9-0)
	A	S	1.156	3	.....	.....		AAA	XXS	3.008	19	8	(11-12)
	AA	XS	1.212	3	8	.....	2½	.....	.....	2.75	5	.....	.....
	AAA	XXS	1.336	4	12	.....		.....	.....	3.00	10	10	.....
1	E	AQ	1.192	1	10	(1-8)		.....	.....	3.25	6	.....	.....
	D	XL	1.232	2	.....	.....	3	.....	.....	3.50	12	8	.....
	C	L	1.284	2	8	.....	4	.....	.....	4.25	7	14	.....
	B	M	1.356	3	4	.....		.....	.....	4.50	16	6	.....
	A	S	1.428	4	.....	.....	5	.....	.....	5.25	9	14	.....
	AA	XS	1.492	4	12	.....		.....	.....	5.50	20	4	.....
	AAA	XXS	1.596	6	.....	.....	6	.....	.....	6.25	11	13	.....
1¼	E	AQ	1.442	2	.....	.....		.....	.....	6.50	24	2	.....

Lead pipe in sizes and weights per running foot other than indicated made to specification.

A New Book on Domestic Air Conditioning

AIR CONDITIONING FOR COMFORT, (Engineering Publications, Inc., Chicago). 244 pages. $2.

One need has been clear to Engineering Publications during the past year—the need for an authoritative study of the problems of air conditioning as applied to human comfort. From all sides have come inquiries indicating a widespread interest, coupled with a lack of information. It was determined, therefore, to secure the services of the most logical man to prepare such a book.

The result is "Air Conditioning for Comfort," written by Samuel R. Lewis, widely known as a consulting engineer.

It is indicative of the practical viewpoint which Mr. Lewis adopted that he has insisted throughout the book on the thought expressed in his preface: "Heating systems are considered in this book along with cooling systems," he says, "because of the very close relation between the two, and because it appears inevitable that the best cooling systems of the future will be those, the designing of which was borne in mind when the heating system, with which it co-ordinates, was designed."

The book deals first with the fundamentals of heating and cooling for human comfort. It then treats of the formulas for computing the various factors. The book closes with the application of the principles and formulas to two residences and a restaurant.

Many tables, charts and drawings, together with the formulas developed, will be of great assistance to the reader in his progress. The man possessing a reasonable grounding in simple mathematics, and familiar with the application to heating of the laws which govern heat transmission, the conveying of fluids and gases, and with combustion, should find no difficulty in following the logical arrangement of the material in the book.

The complete index includes a listing of the formulas and tables. Fastened to the inside of the back cover is a Bulkeley psychrometric chart, the use of which is carefully set forth in the pages of the book.

Mr. Lewis's qualifications for the job are numerous. He is a pioneer in the application of cooling to larger structures. He has designed the heating and ventilating systems for the schools of Toledo, Ohio, for twenty-four years; and for those of Columbus, Ohio, since 1913. During these years he has carried on a consulting practice in heating and ventilating. He is a past president of the American Society of Heating & Ventilating Engineers, and has been chairman of the committee on research, and the committee on that association's Guide.

Trouble—

(Continued from Page 47)

"I guess that explains their troubles," he said.

"What does?"

"I suggested that they install a trap at the bottom of each supply drop and that they connect the trap to the return main, but they connected it to the radiator instead. I wonder why."

"I believe Muller said something about that in his letter. Here it is," and he handed it to me.

Dear Mr. James:

I had our engineer make the enclosed sketch showing the changes exactly as he had made them. We followed Mr. Brown's first suggestion, but when we came to do the work our engineer was not well enough to do the welding, so he had his assistant connect the trap to the radiator with pipe and fittings. He said this was just as good as connecting it to the return main.

You might be interested to know that we have tested all of the diaphragm valves and find that they all close tightly.

Yours truly,
C. D. Muller.

"This is one time when the 'just as good' way did not work out very well," I said. "However, we mustn't judge their engineer too harshly. I've used the scheme he employed many times and with excellent results. There is no doubt that the water which the trap drains out of the riser drop flows through the ground floor radiator and the radiator trap and then into the return main, which accounts for the absence of the old noise. In this case, the cards are stacked against this arrangement because there is so much water to handle."

"Why should there be so much? Surely those short supply drops don't condense much steam."

"But the risers above the supply main do, and all of the water formed in them falls into the supply drops below."

"How does that happen? Don't the risers drain back into the supply main?"

"The steam is fed to each riser through the side opening of a tee, with the run vertical. The risers above the main are connected to the upper openings and the supply drops are connected to the lower openings," I said as I drew Fig. 4. "For this reason all the water from the whole riser and the supply drop drains through the radiator. They carry about 2 lb. steam pressure and about 8 in. of vacuum. When the diaphragm valve is closed the pressure in the radiator drops to the return vacuum which is about 8 in. When the trap discharges water at 210 deg. Fahr. or 212 deg. Fahr. into the radiator at 8 in. of vacuum, some of the water flashes into steam. This flash steam plus the hot water which does not flash is sufficient to keep the radiator warm."

"That is news to me. Why doesn't the same thing happen on the other jobs where you used this scheme?"

"It does, but in almost every case only a little water is drained through the radiator and the radiator is not heated enough to be noticeable.

"The only suggestion I have is that they reconnect the traps to the return main as I originally suggested."

A few weeks later, Mr. James received the following letter:

Dear Mr. James:

When we received your letter telling us that our trouble was caused by the hot water which the traps discharge into the ground floor radiators, our engineer and I were not convinced that your explanation was right. We finally decided to disconnect one of the traps and to permit it to discharge into a bucket. The trap discharged so much hot water and so much of it seemed to burst into steam that we soon were convinced that your explanation was right. We immediately connected all of the traps to the return main and now when the diaphragm valves are closed the radiators are stone cold.

Very truly yours,
C. D. Muller.

YOUR REPUTATION DEPENDS UPON YOUR INSTALLATIONS

FOR generations "SPANG" PIPE has been the standard by which all good pipe has been judged. Its soft, ductile qualities make it ideal for rapid cutting, threading, bending and coiling on the job,—the true, clean-cut threads assure tight-fitting permanent joints at all times.

Standardize on "SPANG" WELDED STEEL PIPE,—it is your best assurance of dependable pipe performance.

SPANG, CHALFANT & CO., INC.

General Offices: **Clark Building, Pittsburgh, Pa.**

SALES OFFICES: New York, Boston, Pittsburgh, Chicago, St. Louis, Tulsa, Los Angeles, Dallas, San Francisco

WELDED MILLS: Etna, Penna., Sharpsburg, Penna.
SEAMLESS MILLS: Ambridge, Penna.

RELIABLE DISTRIBUTORS IN EVERY INDUSTRIAL CENTER

THE PHILADELPHIA SAVING FUND BUILDING

ARCHITECTS
Howe & Lescaze
New York, N. Y.

ENGINEER
H. Berkeley Hackett
Philadelphia, Pa.

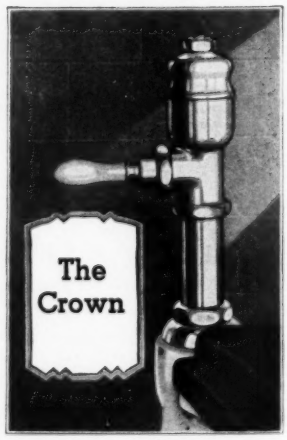
BUILDERS
George A. Fuller Company
New York, N. Y.

PLUMBING FIXTURES
Kohler Company
Kohler, Wis.

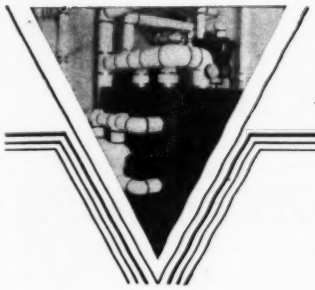
PLUMBING JOBBER
J. D. Johnson Company
Philadelphia, Pa.

PLUMBING CONTRACTOR
Riggs, Distler Company
Philadelphia, Pa.

SLOAN equipped



SLOAN VALVE CO » CHICAGO



ANSWERED

QUESTIONS FROM OUR READERS AND ANSWERS BY OUR ENGINEERS

Is Yeast Good for Septic Tanks?

TO THE EDITOR:

I have a simple question to consider. Is yeast a good thing to flush into a septic tank, about three or five times a year, where soap and grease water drains into the tank? They claim this helps to ferment all or dissolve all this waste matter. By using this new stunt, they claim you can run all your wastes from all fixtures into one soil pipe. It saves running separate waste to outlet of septic tank. Please give me your opinion on this question.

Fremont, O. H. J. U.

TO THE READER:

The use of yeast has been discussed more or less for a good many years, but most especially in connection with seeding the tanks when they are first put into operation. We have never heard that it had any effect on grease and soap. It is possible that there is some local chemical reaction in the water in correspondent's section of Ohio which does make the addition of yeast valuable. Digestion of grease is now being accomplished in the most recent municipal plants, with the accompaniment of a large volume of gas production, but we know of no accomplishment of that sort in the smaller septic tanks.

A Double Hot Water Tank That Does Not Give Satisfactory Service

TO THE EDITOR:

Having installed a double hot water tank heated by a hot water heating system as shown in sketch, Fig. 1, I am having trouble in heating the water in the tank. What can be the cause of this?

New York. E. C.

TO THE READER:

There are several possible reasons why the water in the tank does not heat, although what we think our correspondent means is that the water does not heat to a satisfactory degree and in a reasonable length of time. One cause may be the fact that he is not carrying a high enough temperature in the hot water boiler, or he may not be carrying a high enough temperature *at all times* so that the tank can build up a storage of hot water when the draw-off is small. Another point is that there is only a certain amount of surface in the tank which has water on both sides and through which the heat transfer must take place. A third item is that the circulation lines between the hot water boiler and the tank may be so small that circulation is retarded and the temperature drop of the boiler water passing through the tank becomes excessive.

Having given us no information as to the temperature carried in the hot water heating boiler, the size of the circulation connections and the sizes of the two cylinders in the double tank, nor of the quantity of water it is desired to heat per hour and the temperature rise desired,

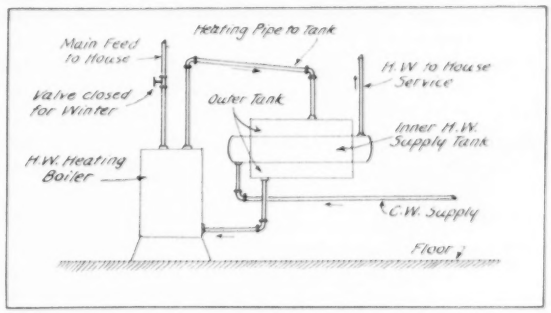
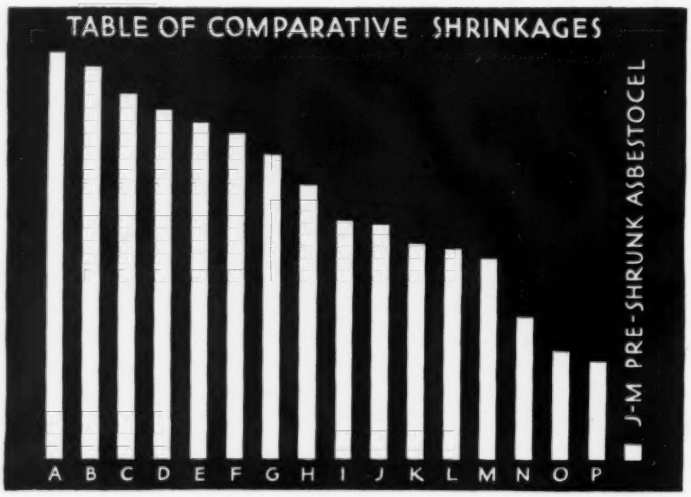


Fig. 1

we cannot offer any suggestions along these lines beyond saying what our correspondent ought to have. In such installations the temperature carried in the heating boiler during the summer is usually between 160 and 180 deg. Fahr., and the circulation lines should be of sufficient size so that the boiler temperature does not drop over 15 to 20 deg. Fahr. in passing through the tank. This will give an average water temperature from the boiler passing through the tank of, say, (170 plus 150) /2 or 160 deg. Fahr. If the water being heated has to be raised 100 deg. Fahr., then the average temperature of the water would be about (50 plus 150) / 2 or 100 deg. Fahr. and, under these conditions, the average difference between the two water temperatures will be 160 — 100 or 60 deg. Fahr., which it will be seen is not a very large temperature difference with which to work.

The transfer of heat from water to water through a steel plate would be about 2/3 as much as through copper which varies from 50 to 75 Btu per sq. ft., per degree of average temperature difference, and this would bring the transfer around 40 Btu per degree. With 60

New Pipe Covering *ends* ALL *objectionable shrinkage*



. . . these Testing Laboratory figures *prove it*

Engineers compared 16 leading brands of cellular pipe coverings with J-M Pre-Shrunk Asbestocel—under conditions comparable to actual service in the field. Tests proved that shrinkage varied from 8 to 33 times greater than Pre-Shrunk Asbestocel—showed an average *shrinkage for the 16 brands* 21.3 times greater.

JOHNS-MANVILLE Pre-Shrunk Asbestocel *eliminates shrinkage troubles*—the one big shortcoming that all cellular pipe coverings have always had . . . yet costs no more than the famous J-M Improved Asbestocel.

Shrinkage gaps are not caused by careless application. They are due to the fact that the asbestos paper in all *old-type* cellular coverings will absorb moisture. This moisture, absorbed while in stock or during application, causes the covering to expand. When the heat is turned on, the covering dries out—shrinks—sections pull apart at the joints. *J-M Pre-Shrunk ends this trouble.*

Why? Simply because J-M Pre-Shrunk is made of waterproofed *paper*. It cannot absorb moisture. The cause of shrinkage is thus eliminated—shrinkage troubles disappear. Every job of J-M Pre-Shrunk stays 100% in appearance. Unsightly shrinkage gaps that spoil the appearance of the job are a thing of the past—so are profitless repair calls and complaints about faulty workmanship.

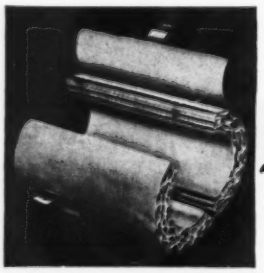
Available in canvas and non-canvas finish—New Non-Canvas type saves* 1/3 *labor cost

By eliminating objectionable shrinkage, Pre-Shrunk has made the time-saving Non-canvas finish practical, for the first time!

This type of finish requires no pasting. Slips easily over the pipe like an open book, then clinches on tight with simple, quick-fastening staples. In test after test, even when applied by operators unfamiliar with it, it has cut application time more than one third. You can add this labor saving to your profits. And the job stays perfect in appearance without the flaws that shrinkage otherwise would cause.

* * *

J-M Pre-Shrunk Asbestocel is now stocked by all better plumbing supply houses. Available in 3 types shown below. Prove the advantages of Pre-Shrunk Asbestocel on your next job. For full particulars, see your supply house or write to Johns-Manville, 292 Madison Avenue, N. Y. C.



Regular Canvas-Covered. *The standard finish for many years provides all advantages of old-style J-M Improved Asbestocel, plus the new Pre-Shrunk feature—yet costs no more.*

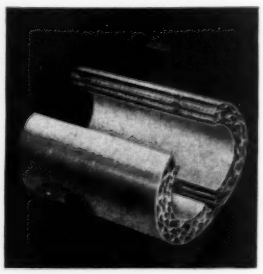
Johns-Manville

JM

Pre-Shrunk

ASBESTOCEL

Asbestos-Covered High-Speed. *With attractive Asbestos Paper Finish. Needs no pasting—saves one-third application time. Costs no more than regular Canvas-Covered Pre-Shrunk Asbestocel.*



Aluminum Finish High-Speed. *A de luxe covering suited to your most particular jobs. Its handsome aluminum finish does not fade. Only slightly higher in cost.*

deg. Fahr. average temperature difference the transfer per sq. ft. would amount to

40 Btu x 60 or 2,400 Btu per sq. ft.

Now a gallon of water heated 100 deg. Fahr. involves raising 8 1/3 lb. of water 100 deg. Fahr., or about 8,300 Btu, which establishes the ratio of heating surface in the tank per gallon of water heated per hour as

8,300/2,400 or 3.46

or 3.5 sq. ft. required for every gallon of water heated per hour. The reason for this large ratio, of course, is the fact of the water having to be heated up to so near the temperature of the boiler water doing the heating.

If the incoming water were to be assumed at 70 deg. Fahr. and if it were only necessary to heat it to 120 deg. Fahr. (which is a good deal nearer to usual summer conditions) then the average temperature of the water would be 95 deg. Fahr., and the average difference 160 deg. Fahr. — 95 deg. Fahr. or 65 deg. Fahr., and the transfer of heat per sq. ft. would be 40 Btu x 65 or 2,600 Btu. But the heating of the water would only require about 4,200 Btu per gallon as it is heated only 50

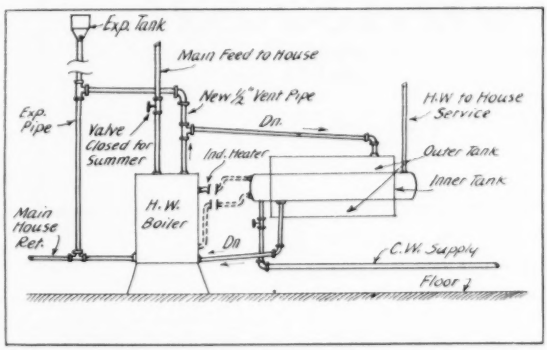


Fig. 2

deg. Fahr. instead of 100 deg. Fahr. and the ratio of heating surface to each gallon per hour heated would then become

4,200 Btu / 2,600 Btu or 1.61 sq. ft., or a little less than half as much. Should our correspondent know how many gallons per hour it is necessary to heat, this will give him something against which to check his heating surface in the double tank.

It is noted on the correspondent's sketch, Fig. 1, that he shows a gate valve on the main hot water supply to the heating system and has marked this "closed for winter." It probably was intended to say, "closed in summer" as it is self-evident that the heating system could not be closed off in cold weather. Also on his sketch he shows a circulation line from the boiler to the tank with an air pocket in the top and has indicated no vent to get rid of this air. In Fig. 2 we have illustrated a scheme which will relieve the air from this high point by installing a half-inch air vent pipe and connecting this pipe into the expansion tank line, so that the air may find its way up to the expansion tank and ultimately be expelled from the system via this route. If it is found that the heat transfer surface on the double boiler is inadequate, an indirect heater could be placed on the heating boiler and connected direct to the service water cylinder, as shown in dotted lines in Fig. 2, to help out the shortage.

Information About "Degree-Day Rating"

TO THE EDITOR:

Can you enlighten me on the subject of "degree-day rating" which, I understand is a method of comparing one winter season with another for the purpose of estimating fuel consumption? What I would like to do is to be able to estimate fuel consumption by this method for any particular winter. For instance, if I revamp a heating plant, on the theory that there will be a fuel saving effected, unless I know how the following winter compares with the previous winter (accurately) I may not be able to convince my customer that I actually have accomplished any real saving. Can you also advise me if the Weather Bureau keeps a record of the above for each year in Chicago and if one can secure data on, say, the last five winters from them?

Indiana. E. W. M.

TO THE READER:

The degree-day method of comparing winter temperatures originally was evolved in connection with gas heating by the American Gas Association, since then it has been more or less widely used for other methods of heating although it probably has not the accuracy for coal that it possesses for gas and oil heat. The number of degree days was computed from weather bureau records covering periods from 20 to 50 years and was carried out in the following manner. Each day has an average daily temperature computed by the weather bureau and, whenever this average daily temperature is below 65 F., it is subtracted from 65 F. and the remainder is the number of degrees that the day was below a temperature when no heat would be required. The sum of these amounts for a month is the number of degree days per month and the sum of all the degree days for a year is the number of degree days for that particular year. The average degree days for a number of years covering a long period in any given place is then assumed to represent the average winter condition for that particular locality.

Each year the degree days are calculated month by month as the winter progresses and the excess or shortage is noted; at the end of the heating season the total excess or shortage indicates how the particular winter compared with the average winter. The actual degree days for any given winter divided by the average degree days will give the percentage of fuel which should be used in comparison to what would be used during an average winter. For example: the degree days for Chicago amount to 6007 for an average over a long period of time; if a winter came along with only 5500 degree days the percentage of fuel that should be used would be

5500/6007 or 90.6%

while, if the degree days ran up to 6500, the percentage of fuel would be

W. A. RUSSELL & COMPANY

A new VACUUM VALVE

"Warco"
TRADE MARK REGISTERED

MASTER
2M
Vacuum Valve

1890
1932

Destined to bring greater warmth and greater fuel saving to thousands of poorly heated homes.

1 Chromium-plated.

2 Unlike any other Vacuum Valve on the market.

3 Two separate valves in one—a venting valve and a vacuum valve—operating independently of each other.

4 No hissing, spitting or leaking—owing to double chamber.

5 The most rapid venting Vacuum Valve in existence.

6 Sensitive vacuum bellows—operates quickly and completely on extremely low pressure.

7 Simple in design and operation—guaranteed for five years.

8 Indispensable where oil or gas fire burners are used.

OUNCE

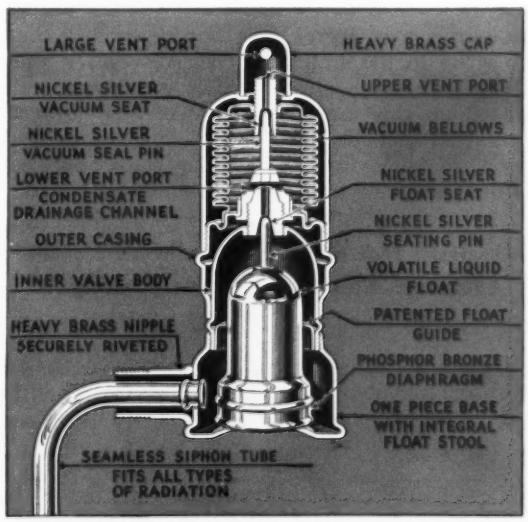
REVOLUTIONARY IN DESIGN AND PERFORMANCE • • •

A NEW and vastly superior Vacuum Valve for one-pipe steam systems! W. A. Russell & Co., pioneer air valve manufacturers, have taken another long step forward.

The Warco Master 2M Vacuum Valve vents air from radiators faster, maintains a higher degree of vacuum, and with far greater fuel saving than have ever been possible before. Rigid tests under extreme conditions and in comparison with other leading valves, have proved it by all odds the most efficient Vacuum Valve on the market.

New possibilities are opened to the Heating Contractor with this improved bellows-type Valve. At a small cost to your customer, you can quickly convert his steam system to a *vacuum system.*

The Warco Master Valve is a good looking job and lives up to its good looks. It is made and guaranteed by a company with 42 years' experience in air valve manufacture. Note the design and construction here shown — then place yourself in position to get the full particulars of this remarkable valve by seeing your Wholesaler or writing us direct.



Warco Master 2M Vacuum Valve
"The 2-in-1 Vacuum Valve"

W. A. RUSSELL & COMPANY
Grand Central Terminal Building
NEW YORK ***Estab. 1890***

Warco

W. A. RUSSELL & COMPANY D
Grand Central Terminal Bldg., New York

Please send complete information and prices on Warco Master Vacuum Valves.

Firm Name.....

Address.....

City..... *State*.....

6500/6007 or 108.2%

It must be remembered that this method has nothing to do with sizing radiators but simply is a comparison of the average temperatures, one year with another, and especially one year with an average of a great many others. The reason that it is not as accurate a method for comparing coal consumption as it is for oil or gas is because oil and gas are shut off immediately when the outside temperatures do not demand heat whereas a couple of cold days early in the month intersperced with warm days, when the fire is banked and carried over to the next cold days, might result in a greater coal consumption than if the first portion of the month were warm and necessitated no fire at all with the last part cold making a fire necessary and utilized on every day even though the degree days for both conditions might work out the same or very nearly equal.

In spite of this fact no better method has so far been evolved for comparison of fuel requirements nor has any other method received the general approval and widespread use that the degree day has. The reason that 65 deg. Fahr. was adopted as the starting point was that this is an average daily temperature and usually represents a maximum temperature in the daytime of 70 to 75 deg. Fahr. while at night the temperature usually falls to 55 or 60 deg. Fahr., under such conditions no artificial heat is required. But below this average temperature the evenings (and, later, the days) get so cold that heat is usually started up. So far as we know the weather bureau makes no record of degree days, but we are sure that, if you write to the American Gas Association they will be able to give you anything which has been calculated on this interesting subject. So long as you use it for fuel comparisons only, you can be sure that you are employing the latest and most approved methods of checking up on fuel consumption.

A Domestic Hot Water Supply Problem and a Question About Greenhouse Heating

TO THE EDITOR:

Is it proper to use a reducing valve on hot water domestic boilers where the water pressure is 60 lb.? In case this is done would the fixtures on the third and fourth floor receive enough water? Also can you tell me if an overhead feed pipe is better for greenhouse heating?

New Jersey. B. F. J.

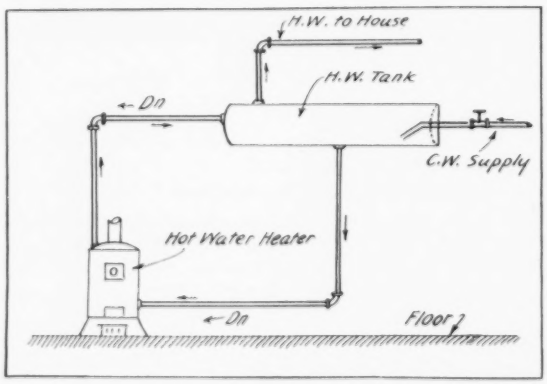


Fig. 1

TO THE READER:

It is not customary to use pressure reducing valves on hot water systems for domestic supply when the street pressure does not exceed the maximum desirable pressure for use on the fixtures. Usually 60 to 70 lb. gauge is considered about as high a water pressure as should be applied to fixtures without introducing undue wear on the taps and valves in an effort to prevent dripping and without causing objectionable splashing. A somewhat lower pressure is desirable, when it may be secured without excessive first cost. The minimum pressure

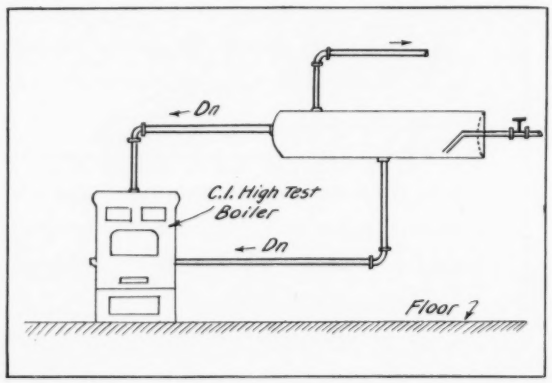
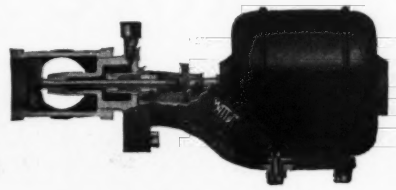


Fig. 2

which should be maintained on the highest fixture is generally assumed at 15 lb. gauge and, of course, the vertical head is equal to 0.43 lb. per foot. This means that fixtures set on the fourth floor and approximately 40 ft. above the level of the street main would require 0.43 lb. x 40, or 17.2 lb., to raise the water up to the fixture and 15 lb. additional to give an adequate operating pressure at the fixture; this makes 32.2 lb. without pipe friction.

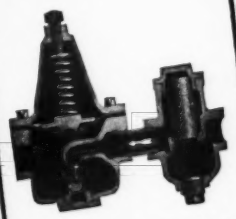
The piping can be so sized as to give almost any pressure drop desired but 10 to 30 lb. drop per 100 ft. of run are the usual limits in order to secure economical pipe sizes. If there were some 60 ft. of horizontal run and 40 ft. on the vertical (as previously assumed) the total length of run would approximate 100 ft., and this would have to be about doubled to allow for fittings, valves and other impediments to free flow so that 200 ft. would represent the total equivalent run. At 20 lb. drop per 100 ft., this would amount to about 40 lb., which added to the pressure necessary at the highest fixture and the vertical head give 40 lb. plus 32.2 lb., or 72 lb., required street pressure.

If there were a water meter, the water meter loss would have to be added to this 72 lb. to get the actual street pressure desired. Naturally the street pressure is fixed, and the gravity head and required 15 lb. at the fixture cannot be altered, so it comes back to the fact that in this particular case the pipe loss cannot be made



Water Circulator Type 47

Diaphragm Relief Valve Type 30

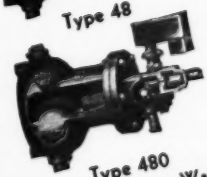


Water Pressure Regulator and Strainer, Type 23-S

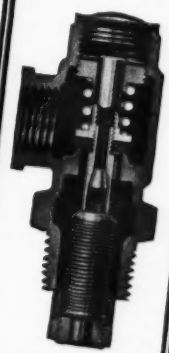
ONE GUARANTEE -
ONE SERVICE -
ONE 58 YEAR OLD FIRM
BACK OF EVERY
WATTS SPECIALTY

BOILER WATER FEEDERS

Type 48



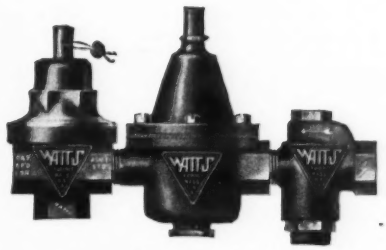
Type 480 Feeder with Low Water Cut-Off Switch



Autotherm Relief Valve, Type 40

Low Water Cut-Off, Type 50

Prices Reduced?



House Heating Unit, Type 38

Since 1874 Watts has been known as a maker of quality products.

Although we realize that price is an important factor at this time, we cannot bring ourselves to a change in designs and a cheapening of products to meet a ridiculously low price.

However, we also realize that we have an obligation to take care of with those Contractors and Wholesalers who have been loyal to Watts.

It is our duty to these loyal Contractors and Wholesalers to put them in a position to get their just portion of this type of business.

We therefore have some special propositions to offer and would like to have you fill out the coupon below and receive by return mail complete information.

PLEASE REMEMBER THIS—

Since 1874 Watts has been building water and steam regulating devices—instruments of precision—products that must be accurate and positive in performance.

Since 1874 Watts has been through all the "horrors" of different countrywide water conditions—disc and diaphragm fatigue—spring distortion.

Does it not seem reasonable that a concern who has been specializing in this way for 58 years should have experience and knowledge that is invaluable and must of necessity appear somewhere in its finished products?

Write us or mail the coupon.

WATTS REGULATOR CO.

249 Lowell Street Lawrence, Mass.

John G. Kelly, Inc., Distributors, 210 East 45th St., New York

WATTS House Heating Systems

WATTS REGULATOR CO.,
249 Lowell St., Lawrence, Mass.

Without obligation, please send your catalog and special proposition on.....

.....

Name.....

Address.....

City.....State.....

Ah, the Good Old Stove!

The gilt-framed photo of "dear papa" gazing into the room from his place on the wall... the bulbous kerosene lamp... the sturdy iron stove glowing red in its corner... what pleasant memories they bring back.

There was a time when the good old stove was modern. There was a time when exposed radiators, which replaced it, were modern, too!

Now-a-days, modern heating is concealed heating . . . by convectors.

Don't run the risk of having your work classed as old-fashioned in a year or two. Start now to install Rome Convectors.

Rome has designed convectors and complete units (consisting of convectors and enclosures) to meet every modern construction need. Moreover, Rome has standardized them not only as to types and sizes, but also as to methods of installation.

You can profit by using Rome Convectors on replacement and remodeling jobs as well as on new work.

GREATER HEATING CAPACITY . . . LESS SPACE

Besides being modern, remember that Rome Convectors are built up to a high standard and not down to a price. They can be counted on for life-long service. They have maximum effectiveness because of the use of copper with its high conductivity . . . the highest of any commercially available metal. This results also in compactness . . . an important item in all modern construction.

ROCOP and ROBRAS Convectors are fully described and illustrated in a recent bulletin. Other data included: tables of capacities and weights, dimension diagrams, methods of installation, etc. A copy will be sent you on request.

WANTED . . . Agents of good character and ability to represent Rome Radiation Company in territories still open. Inquiries invited.

Rome Radiation Company

DIVISION OF

Revere Copper *and* Brass Incorporated

ROME, N. Y.

PR PIPE

(PAUL REVERE PIPE)

in a replacement job

Saved Thousands of Dollars!

PUBLISHERS

Music rooms such as described in the text are not common. But paneled rooms like the above are. PR Pipe can save important sums of money when piping systems in homes of this type need replacement.

The piping system in a very fine Irvington (N.Y.) home sprang a leak.

This leak was behind the walls of a music room. It had a vaulted ceiling with expensive fresco work. There was a pipe organ in the room, underneath the ceiling.

Imagine if it had been necessary to tear out walls and ceiling! The expense of repairing the damage would haye run into thousands. The organ might have been in danger.

But PR Pipe saved all this. PR Pipe, Soft Temper, was used with 100% success . . . to repair the piping system. The pipe was *snaked* through the walls. No wholesale ripping up. No mess. Very little extra cost, other than for plumbing work.

The owner got an economical and satisfactory job. The plumbing contractor made a nice profit.

\+ \+ \+

PR Pipe is 99.9% pure copper, completely deoxidized and having a gun-barrel inside finish free from flaws. It has the effective wall-thickness of S.P.S. (standard pipe size) pipe. It can be used with all standard compression and soldered fittings.

It comes in two tempers: Soft, for concealed replacement work, and services; and Hard, for new work and exposed runs. Both the soft and hard tempers can be bent to meet installation needs, the former either by hand or with an inexpensive hand-operated bending tool; the latter with the bending tool.

PR Interior Tube *. . . A hard-drawn pure copper tube of lighter wall-thickness than PR Pipe, for interior plumbing use only. Furnished in 20-ft. straight lengths. Used with sweat or soldered fittings.*

It will pay you to find out more about PR Pipe and PR Interior Tube. Address Revere Copper and Brass Incorporated, 230 Park Avenue, New York City.

Revere Copper *and* Brass

INCORPORATED

P R PIPE

Baltimore *Division, Baltimore, Md.* Michigan *Division, Detroit, Mich.* Higgins *Division, Detroit, Mich.*
Dallas *Division, Chicago, Ill.* Taunton-New Bedford *Division, Taunton, Mass.* Rome *Division, Rome, N.Y.*

EXECUTIVE OFFICES: NEW YORK CITY
GENERAL OFFICES: ROME, N.Y.

20 lb. per 100 ft. of run but must be made such an amount that the total pipe drop does not exceed

60 lb. — (15 lb. plus 17.2 lb.) or 28 lb. (approx.), including the water meter loss. If the meter loss is assumed as 10 lb., for the sake of calculation there will be left for pipe friction only

28 lb. — 10 lb., or 18 lb.,

and this 18 lb. drop must cover 200 ft. of equivalent run or about 9 lb. per 100 ft., allowable line loss.

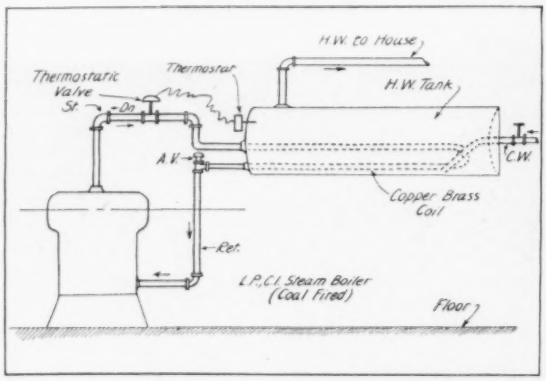


Fig. 3

This indicates that our corespondent is quite correct in being doubtful that a proper water pressure will be secured at the top fixtures if a pressure reducing valve is used, and—in fact—he will have to size his piping very carefully on a maximum drop of 9 lb. per 100 ft., if he desires 15 lb. at the top fixtures and our assumed lengths or run are approximately correct.

The way this matter is ordinarily handled is either to use a hot water heater of the water service type, a special cast iron boiler built for this service, to change the heating boiler to a steam type boiler and put a steam

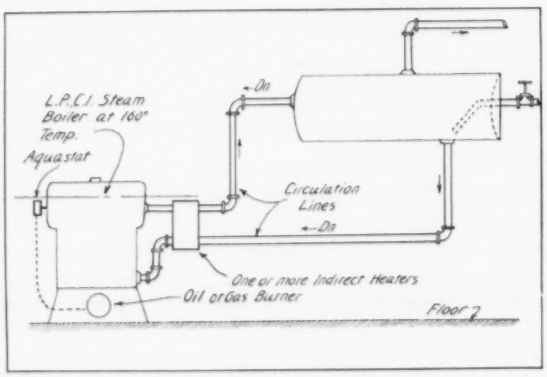


Fig. 4

coil in the tank, or to use indirect heaters on the steam boiler. Any of these arrangements will handle water of 60 lb. gauge pressure without difficulty and with entire safety. The ordinary hot water heating boiler is only guaranteed to handle water pressures up to 30 lb., and is so stamped on the boiler, usually on the doors. The factor of safety in most cases will allow a pressure as high as 60 lb. to be used on these boilers without cracking the boiler and cases have been known where pressures as high as 100 lb. have been applied to hot water heating boilers without damage, while another case with a round type cast iron hot water heating boiler had a constant pressure of 50 lb. applied on it from a roof tank and had the section over the fire pot crack three times in less than one year. It must be understood that when such boilers (guaranteed only for 30 lb. and used on higher pressures) have something happen, there is no redress to be secured from the manufacturer.

The ordinary coal burning hot water heater suggested above and built for such service may be safely used on 60 lb., as well as the special high test cast iron heating boilers. Fig. 1 and Fig. 2 illustrate how these would be connected up. The steam boiler with a coil in the tank, naturally only has the steam pressure on the boiler which usually is kept around 5 lb. gauge and is shown in Fig. 3. The indirect heater arrangement is given in Fig. 4, and in this case there is no pressure at all on the boiler, thermostatic control being provided to hold the boiler water temperature around 160 deg. Fahr. We feel sure it will be to our correspondent's advantage to adopt one of the four methods suggested.

In regard to the use of the overhead main in greenhouse heating we would advise that better circulation usually results with this scheme as the vertical head is increased and often a better pitch can be secured; the objections to a main so located are several, among which might be mentioned the difficulty of supporting the main in this position, the unsightliness, and the radiation of a certain amount of heat in the top of the house where it is not required.

Will Oil Cause Trouble in a Cesspool?

TO THE EDITOR:

I have been troubled with flies and I am inclined to think that they are breeding in a cesspool. Can I stop such breeding by putting some oil into the cesspool?

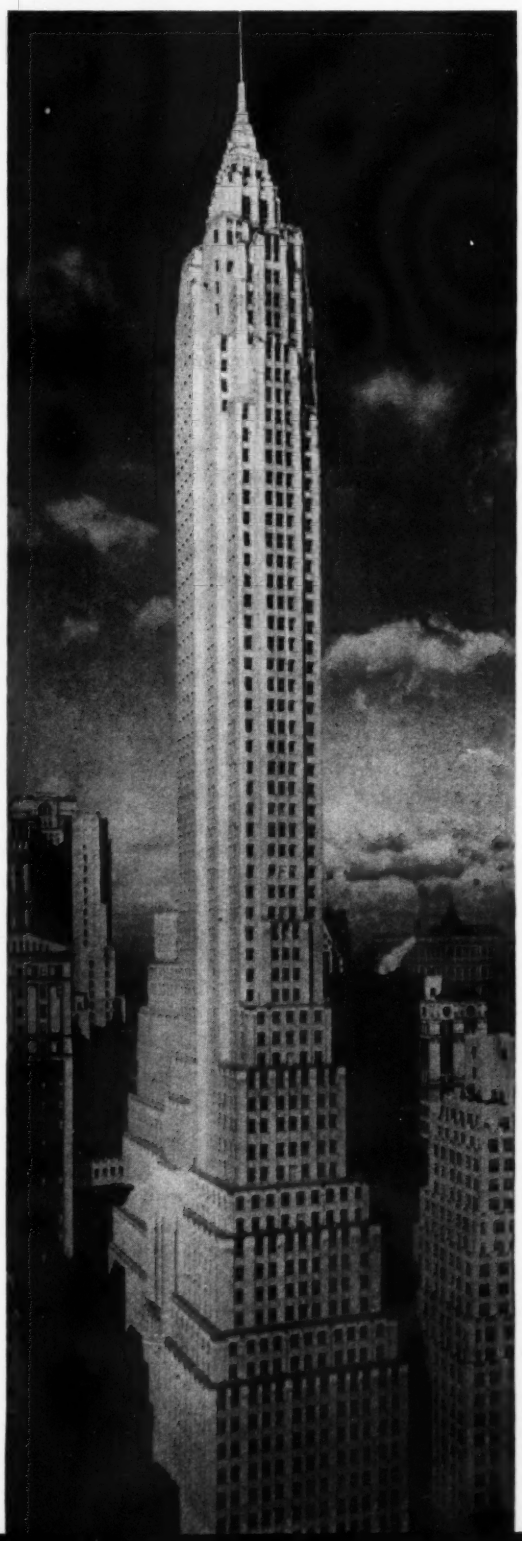
If I pour oil into the cesspool, will it have any bad effect by interfering with the proper action of the bacteria that may be operating in it much as they do in septic tanks?

Is it possible for flies to breed in cesspools?

Pennsylvania. J. H. S.

TO THE READER:

Answering the last question first, flies will breed in cesspools, if there is a fairly heavy and thick scum on top of the contents. Ordinarily, they will not hatch out, that is complete their cycle of development in a cesspool. To make this clear, we will go into the life history of the fly for a moment. The eggs are laid in a suitable place, in this case on the scum; the larvae or maggots hatch out in a few days, and live and feed in this scum; the next stage, the pupal, requires a fairly dry place, and the larvae will probably attempt to burrow into the ground around the upper sides of the cesspool, if this is not walled up, or will crawl out of the cesspool and



SIXTY WALL TOWER

HIGHEST IN DOWNTOWN NEW YORK, THIRD IN ALL THE WORLD

●

Architects: Clinton & Russell, Holton & George, *Heating & Ventilating Engineers:* Tenney & Ohmes, *General Contractor:* Jas. Stewart & Co., *Plumbing Contractor:* Jas. McCullagh, Inc., *Heating Contractor:* Riggs, Distler Company, Inc. *All of New York City*

NOT only in physical dimensions but in all that goes to make such a building admirable, "60 Wall Tower" stands high. Architects, engineers, and builders have given it dignity and soundness above the ordinary in design, construction, and equipment. In beauty, convenience, and outlook its occupants find much that is inspiring. Among its several advantages—superior transportation facilities and fine unobstructed views from successive set-back levels, etc.—the management directs attention to highly improved heating and ventilating for the health and comfort of the occupants. In the forced hot-water system by which the building is heated, it is worthy of mention that NATIONAL Pipe was used. Thus once again, signal recognition is accorded to NATIONAL—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY

Subsidiary of United States Steel Corporation

PITTSBURGH, PA.

NATIONAL PIPE

burrow into the ground around it. This whole proceeding is quite possible, but there are so many other places where flies may be produced, that it is very likely that some other source is more to blame. This can be determined only by an inspection of the area by some one familiar with fly producing conditions.

Oil will not interfere with the workings of the cesspool, unless used to excess. Usually, however, it is not very effective, since only certain types of oil will kill fly larvae—certain crudes, etc. Spraying with creosote would be more effective. The best method is to cover the cesspool so that flies cannot get in or out.

Can You Answer These Questions?

A Question and Its Answer

The following question was asked in the August issue, and the following answer is by a reader:

A prospective purchaser of an oil burner advises that he is using an average of ten tons of 13,000 Btu. coal per year; how much would 30 degree oil cost him at 4 cents per gallon, and how would it be likely to compare with coal at $13 per ton?

WITH the quantity of coal burned per annum as a basis it always is possible to arrive at a reasonable assumption as to the amount of oil which would be required to supply an equivalent amount of heat if the efficiencies of the apparatus operating under the two conditions is taken into consideration. For a coal burning installation run as it usually is operated in the ordinary house job it is doubtful if the overall seasonal efficiency will exceed 60 per cent. Some authorities claim that often it does not even reach 50 per cent. While this may occur in some cases it is believed that 60 per cent is a fair and reasonable figure to assume for an ordinary plant. With oil used as a fuel the efficiency of a boiler generally increases about 10 per cent so that it might be fair to assume an overall efficiency on oil of about 70 per cent. Care must be taken to distinguish between seasonal efficiency and test efficiency as seasonal efficiency covers all partial loads, warm days, lack of attention, etc., occurring throughout the season while test efficiency is the best results that can be obtained from a boiler usually with everything in its favor such as careful attention, good proportion of the full load, clean tubes and so on.

The first step in finding the comparison, or the equivalent oil, in such a case is to determine approximately what amount of heat is being delivered by the coal burning plant under its usual operating condition and—if 60 per cent is considered as a probable average for the season—this amount can be ascertained by multiplying the Btu. in one pound of coal by the average efficiency to obtain the number of Btu. delivered into the boiler with the combustion of each pound of coal; this gives

13,000 Btu. × 60 per cent or 7,800 Btu. per lb.

and the amount of Btu. received from each ton of coal is 2,000 times this (unless coal is purchased by the long ton as occurs in some localities in which case there are 2,240 lb., to the ton) or

7,800 Btu. × 2,000 or 15,600,000 Btu.

so that the Btu. delivered per season with the consumption of 10 tons of coal would be

15,600,000 Btu. × 10 or 156,000,000 Btu.

This, then represents the amount of heat being delivered to the boiler per season and the amount of heat which the combustion of the oil to be substituted must produce and deliver to the boiler.

Now the oil in burning does not deliver all of the heat produced into the boiler any more than the coal does but, owing to cleaner tubes or heating surfaces and to the fact that the fire is always bright and producing the maximum amount of radiant heat, the percentage is somewhat better than with coal and this percentage has been assumed at the start as 70 per cent. If 30 degree oil has a heat content of about 142,000 Btu. per gallon, then the amount of heat delivered into the boiler from each gallon of oil burned will be

142,000 Btu. × 70 per cent or 99,400 Btu.

which must be divided into the total Btu. received into the boiler from the coal, thus:

156,000,000 Btu./99,400 Btu. or 1,570 gal. approx.

We now know that in place of the 10 tons of coal formerly burned that there will have to be supplied approximately 1,570 gallons of oil and the matter of figuring the cost of each kind of fuel is simply the multiplying of the number of tons or the number of gallons by the price per ton or the price per gallon as the case may be. This gives for the seasonal cost of the coal

$13.00 × 10 tons or $130.00

while the cost of the oil will be around

$0.04 × 1,570 gal. or $62.80

Of course these costs will not hold where the prices paid for coal and oil vary from those taken in the above calculations but the ratio of oil to coal would be constant for all cases where the Btu. content of the coal averages 13,000 Btu. and the oil proposed is around 30 degree gravity. Had the coal been purchased at $10.00 per ton and had the oil cost $0.06 per gallon the costs would change to

$10.00 × 10 tons or $100.00 for coal

and

$0.06 × 1,570 gal., or $94.20 for oil.

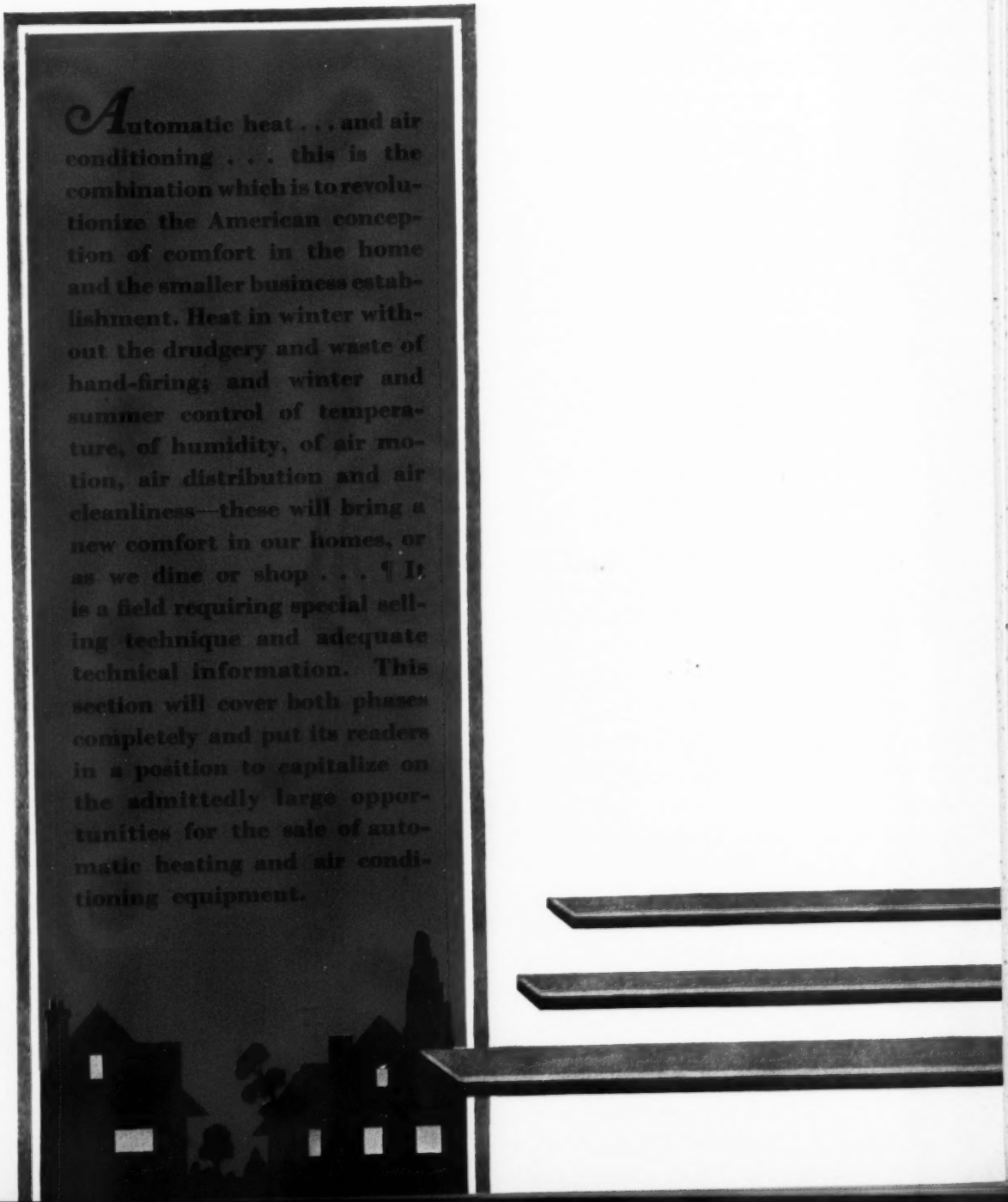
How Would You Answer This Question?

In the case of a house with a one-pipe gravity steam system and a garage 30 ft. away, it is desired to place a radiator in the garage fed from the steam in the house. If the grade line between the house and the garage is only 3 in. above the boiler water line how would you proceed to do this?

Answers based upon your experience, and suitable, will be paid for and published in the December issue.

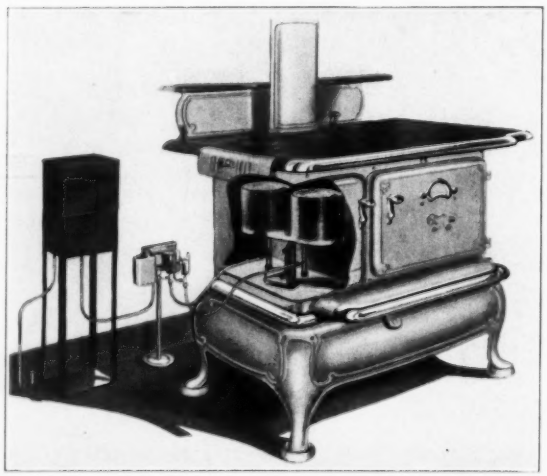
Automatic Heat *and* Air Conditioning Dealer Section

Automatic heat . . . and air conditioning . . . this is the combination which is to revolutionize the American conception of comfort in the home and the smaller business establishment. Heat in winter without the drudgery and waste of hand-firing; and winter and summer control of temperature, of humidity, of air motion, air distribution and air cleanliness—these will bring a new comfort in our homes, or as we dine or shop . . . ¶ It is a field requiring special selling technique and adequate technical information. This section will cover both phases completely and put its readers in a position to capitalize on the admittedly large opportunities for the sale of automatic heating and air conditioning equipment.



again Silent Glow crashes thru!

now with the only *fully automatic* range burner



Again Silent Glow leads the way. Once more—as so often during the past eight years—Silent Glow creates a new standard of quality in range burner construction.

In the new "Homemaker Model," Silent Glow engineers offer a unit that incorporates all the superior features of the famous Model W, and in addition does three amazing things. First, reduces lighting to the one operation of simply turning on the oil. Second, banishes the nuisance of filling the oil bottle and carrying oil by hand. Third, permits the customer to have a unit in whatever color desired.

No Torches—No Matches
No Electric Switches

Built into the burner is the newly patented Glow-starter. This burns constantly, but uses only a few cents worth of fuel a year. To light the burner, it is only necessary to turn on the oil. No need to use a torch or disturb shells and top plates. And no electric gadgets to get out of order.

No Running Up and Down Stairs for Fuel

In place of the conventional glass bottle, the Silent Glow "Homemaker" is equipped with a handsome 3½ gallon metal tank, obtainable in any standard color, and mounted on a black enameled four-post stand. A visible indicator shows the amount of oil in the tank. When the oil becomes low, a few strokes on the small pump near the stove automatically refills the tank.

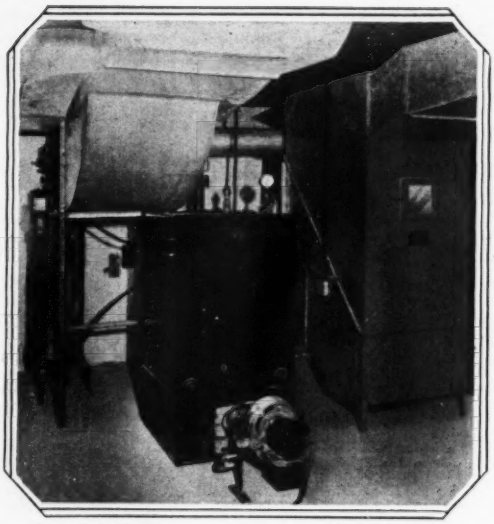
Still another quality feature of the Silent Glow "Homemaker" is its vitreous enameled burner base. This provides quicker heat, reduces carbon deposits and insures a steady, clean flame.

Read this advertisement over again and frankly ask yourself whether you can think of any other range burner that has so many selling points.
Then write for particulars today.

THE SILENT GLOW OIL BURNER CORP.
HARTFORD, CONN.

BOSTON CHICAGO ST. PAUL

Manufacturers of the most complete line of oil burning equipment in the world.
Member National Electric Light Assn.
Member American Oil Burner Assn., Inc.
Member National Fire Prevention Assn.
Member Oil Heating Institute
Member Distillate Burner Manufacturers Assn.
In Canada: SILENT GLOW OIL BURNER CORP., LTD., 162 St. Catherine St. West, Montreal, P. Q.



This is the unit as installed. It has since been improved to secure an even higher degree of efficiency

Temperature . . . . . 70°
Humidity 41%
evenly maintained when outside temperature was 6° below zero, by this

Oil-Fired Air Conditioning Job . . . . . .

THIS article is a splendid example of that coupling of automatic heating and air conditioning equipment which is, without doubt, to be the ideal of the future. Furnishing evenly maintained heat and humidity, with proper air distribution and cleanliness during the winter; affording a degree of comfort cooling during the winter; and at all times utterly free from the drudgery of the old firing methods, this installation is one that should be of the highest interest to plumbing and heating contractors. It represents, perfectly, their opportunity for future growth.

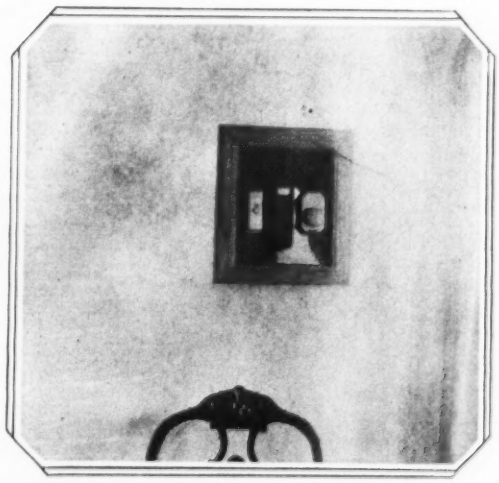
The men who make up the firm which installed this particular job see a large market for air conditioning in the better type of home, running from $8,000 upward. "The market embraces every such home," said one of the members of the firm, "so thoroughly that air conditioning is going into those homes in the same quantity as electrical refrigeration in the last few years. It will be just as readily accepted. I base this on our contact with home owners, with architects, builders and real estate people."

Like good merchandisers, the firm is missing no possible opportunity to reach those who will be interested in air conditioning. At the 1932 home show in Milwaukee, they exhibited a unit and, through contacts with architects, secured the attendance of nearly every one to see the unit in operation. Out of this home show they secured four sales and something like thirty-seven prospects. Twelve additional sales, at least, are anticipated. One of the men who visited the exhibit said: "This is worth the price of admission to me. There was nothing here that interested me more. I am building a new home soon and you don't have to bother to call me up, because when the time comes this system will go into my home."

It is the view of the organization that apartment houses will be forced to come to air conditioning because of the competition which will have to be met when aggressive apartment house owners see the value of air conditioning in helping them to rent, and keep rented, living quarters in their buildings.

The modern air conditioning system described in this article questions the belief that the furnace has a corner on the air conditioning field for the average home. This fine residence installation takes its heat energy from a boiler, using oil for fuel.

The building in question is a two-flat. There are ten major rooms, two baths, two vestibules, two halls. The



An attractive panel holds the controls—which have also been improved by closer matching in design

File No.

Exposure Factors: N 35% NW 30% NE 25% W 20% E 15% SW 10% SE 5% S 5%

Based on −10 °F. Cold Weather & Prevailing Winds From North

Bldg. Two Flat Date

Dist No. or Loc. Milwaukee Twp. Co.

Bldg. H. & V.

Archt. Engr.

Rooms No.	FIRST FLOOR						
Use	Living	Dining	Kitchen	Bed Rm	Bed Rm	Bath	Vestibule
MEASUREMENTS							
1. Room Dimensions	15'x21'	15'x13'	16'x12'6"	11'x13'	12'6x12'6"	8'x8'	6'6"x11'
2. Cubic Feet Space	2520	1560	1600	1144	1250	512	582
3. Room Floor Area	315	195	200	143	156	64	71.5
4. Floor Const. & Factor							
5. Ceiling Const. & Factor	.60-18		.60-18	.60-18			.60-18
6. Window Const. & Factor	.60-48	.60-48	.60-48	.60-48	.60-48	.2-96	.2-96
7. Wall Const. & Factor	.125-10	.125-10	.125-10	.125-10	.125-10	.125-10	.125-10
8. Exposed Sash and Door Perimeter, equiv.						13	20
9. Leakage B. T. U. per ft. of Perimeter						60	60
10. Expd. Wall Gross Area	288	112	222	192	104	64	105
11. Expd. Window Gross Area	90	28	42	32	30	10	30
12. Expd. Wall Net Area	198	84	180	160	74	54	75
13. Exposure Direction	S.W.	S.	S.E.	N.E.	N.	N.	N.W.
14. Room Temperature	70°	70°	70°	70°	70°	70°	70°
HEAT LOSSES							
15. Wall Loss B. t. u. per Hr.	1980	840	1800	1600	740	540	750
16. Window Loss B. t. u. per Hr.	4320	1344	2016	1536	1440	960	2880
17. Subtotal Loss B. t. u. per Hr.	6300	2184	3816	3136	2180	1500	3630
18. Expos. Allow. B. t. u. per Hr.	630	109	191	784	763	325	1089
19. Floor Loss B. t. u. per Hr.							
20. Ceiling Loss B. t. u. per Hr.	2070		1350	1260			1285
21. Leakage Loss B. t. u. per Hr.						780	200
22. Total Heat Loss	9000	2293	5357	5180	2943	2805	7204

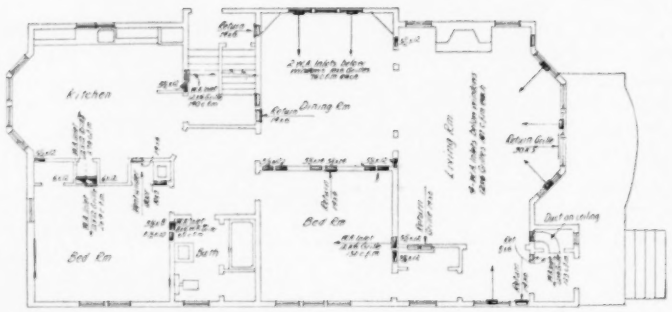
house is 29 ft. x 54 ft. approximately, with a large recreation room in the basement.

Located at Milwaukee, Wis., the house at —10° outside temperature has a building loss load of 90,500 Btu. per hour.

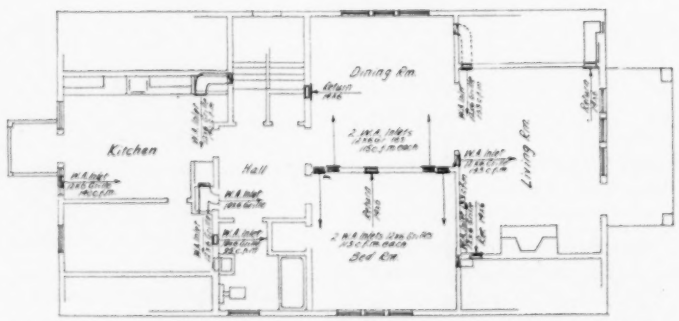
Storm sash are provided for all rooms. The building is of the story and one-half type and several rooms on the first floor have ceiling losses. Areas, cubical space, glass, and wall areas may be observed on the data sheet.

The entire system is indirect. Warm air inlets are placed under windows or 6′ 6″ above the floor. Returns are in the baseboard at the floor line and directly above at the ceiling. In the heating season the returns in the baseboard are used and in the cooling season the warmer air is drawn off at the ceiling line. Every room has one or more warm air inlets, and returns are placed in all rooms except kitchens and bath rooms.

Above and on following page is the data sheet on which is recorded every bit of necessary information. Below are the floor plans of this air conditioned residence. The basement plan is at the bottom of the opposite page



FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOW THE SYSTEM OPERATES

The system in brief is composed of five parts. An air washer where the air is cleaned and dehumidified in the summer. Great care has been taken to obtain the elimination of free water as an entrainment beyond

SECOND FLOOR							BASEMENT		TOTALS
Vestibule	Living	Dining	Kitchen	Bed Rm	Bath	Hall	Store	Recr. Rm.	
7'x4'	13'x17'	13'x13'6"	11'x13'6"	13'x12'6"	8'x8'	8'x8'	6'x13'6"	27'x29'	
224	1765	1400	1188	1300	512	512	648	5470	
28	221	175.5	148.5	162.5	64	64	81	783	
								.55-11.5	
.60-18	.60-18	.60-18	.60-18	.60-18	.60-18	.60-18	.60-12	—	
1.2-96	.60-48	.60-48	1.2-96	.60-48	1.2-96		1.2-96	.60-48	
125-10	125-10	125-10	125-10	125-10	125-10		125-10	.22-88	
20			20		13				
60			60		60				
88	304	104	204	104	64		152	475	
23	51	36	51	28	10		10	21	
65	253	68	153	76	54		142	454	
N.W.	W.	S.	E.	N.	N.		E.		
70°	70°	70°	70°	70°	70°		70°	70°	
650	2553	680	1530	760	540		1420	3990	
2208	2448	1728	2448	1344	960		960	1008	
2858	5001	2408	3978	2104	1500		2380	4998	
858	1000	120	595	736	525		357		
								9000	
504	2978	1380	2670	2925	1150	1150	1460		
1200			1200		780				
5418	8979	3908	8443	5765	3955	1150	4197	13998	90,500

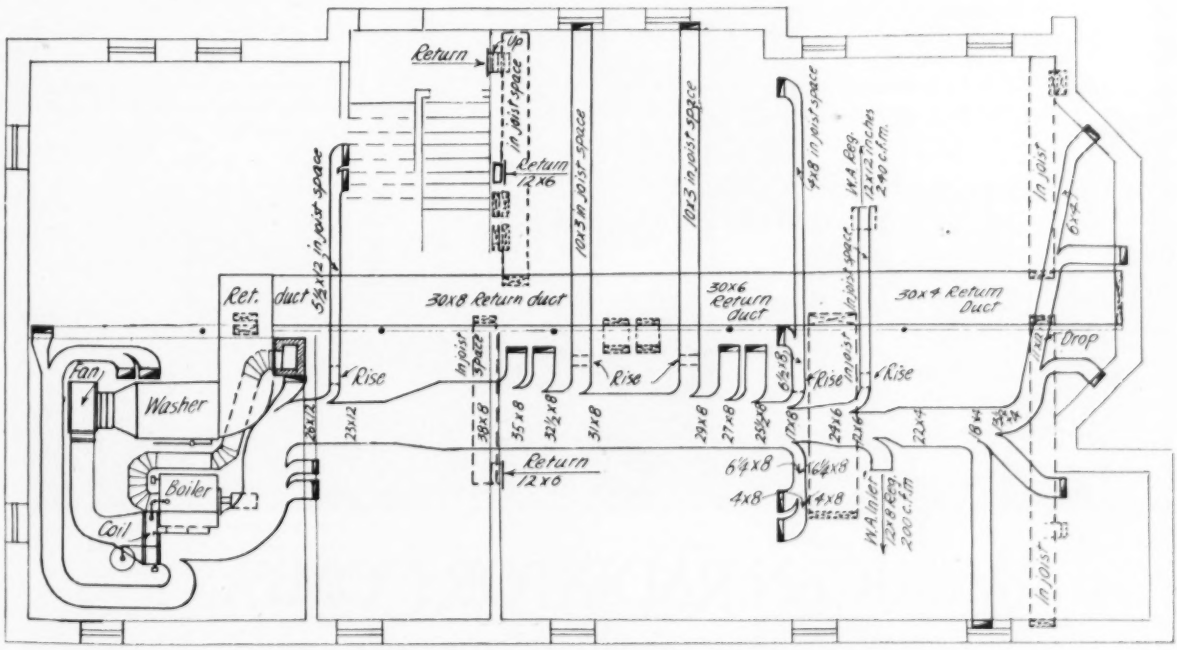
the washer baffles. All but negligible humidification in winter takes place in and with the humidifying element.

A motor driven fan of the multivane type for delivery of the air to the various rooms; a boiler and coil comprise the heating elements; a system of supply ducts and returns for the warm air inlets and exhausts.

Oil is used as fuel and the burner is the gun type. The general set-up of the apparatus is shown in the photograph, page 83. This picture was taken before the domestic hot water supply element was connected to the boiler, and does not show. This connection is shown in the drawings. Fig. 1 is a photo of an improved unit.

When the temperature in the house drops below 70 degrees the oil burner cuts in. When steam reaches the heating coil a hydro switch opens the circuit that cuts in the fan and the air washer and the system is in operation. This same hydro switch cuts in the humidifying spray line that terminates in the chamber in front of the coil, but the humidistat in the house permits the spray to work only if the relative humidity is below that for which the humitrol is set. The entire system is of course intermittent. Before the house temperature has reached 70° the oil burner cuts out, but the system

(Continued on Page 108)



BASEMENT PLAN

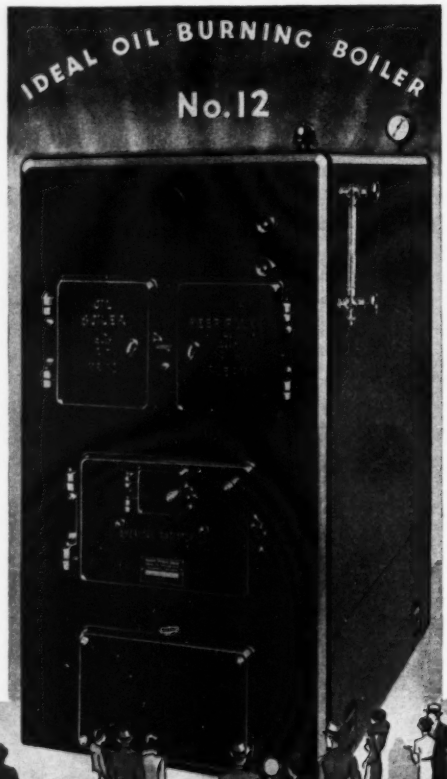
The best Oil Burner *deserves the best* Oil Burning Boiler

● When your heating prospect decides on oil as a fuel and selects an oil burner—the next step is the boiler. One is just as important as the other.

● In view of recent developments in the oil burning field, your prospect is likely to be boiler as well as burner-minded. He has been educated to the desirability of a complete oil unit—boiler as well as burner designed solely for oil.

● If his present boiler is not designed for burning oil, the best oil burner in the world won't give him maximum heating efficiency or economy.

● You will be doing him a real service and increasing the amount of your sale if you recommend that he install his oil burning unit in American Radiator's Ideal Oil Burning Boiler No. 12.



● Designed with new and exclusive features, Ideal Oil Burning Boiler No. 12 has been built in cooperation with the American Oil Burner Association, to meet all the special requirements of burning oil. It is not an adaptation of any boiler originally built for other fuel.

● It is designed for efficient operation, with rotary or gun type burners of all standard makes. Burners can be installed either in front or rear. For greater efficiency its flue travel is four times the length of the boiler. Large combustion chamber provides for complete oil combustion. It simplifies external hot water connections... has a special vision port for observation. It is completely encased in a light green metal jacket—clean, lustrous and attractive.

● It will pay you to tell your oil heating prospect that—"the best oil burner deserves the best oil burning boiler"—Ideal Oil Burning Boiler No. 12.

Write for catalogue

AMERICAN RADIATOR COMPANY

40 WEST 40th STREET, NEW YORK

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

A. J. Parks Solves

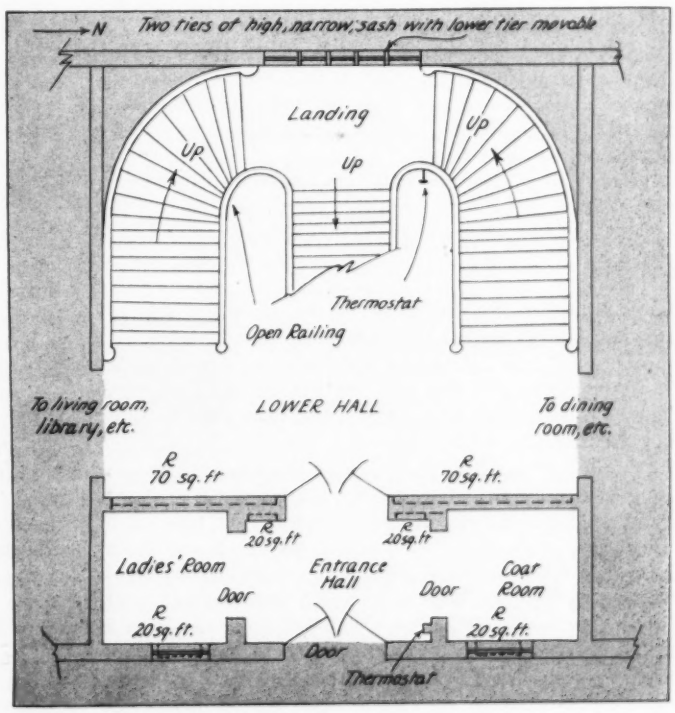
Two Comfort Control Problems

OCCASIONALLY it happens that the heating equipment in a room is so arranged that the room heats unevenly. In such rooms it is impossible to obtain good results. Even if the thermostat is in an average location in such a room, the coldest parts of the room are too cool, and the warmest parts too warm because the room is so unevenly heated that it can not possibly be controlled by the thermostat, which can be in only one place at a time and can be responsible only for the air conditions around itself. When such rooms are encountered, the heating arrangement should be changed to provide fairly uniform heating. Such conditions can be avoided, of course, by careful design in the first place. One of my recent experiences had to do with one of these systems that are very difficult to design.

Mr. Andrews, an architect, asked me to call at his office at my earliest convenience as he had a tricky heating problem on which he wanted some advice. When I entered his office he said, "I'm mighty glad to see you, Parks, for I have a mean place to heat and control. Won't you come into the drafting room?"

As I followed him he said, "We are drawing plans for a fine residence for the Gordon sisters. You know those two eccentric old ladies in Greenview, don't you? Well, they're old and cranky and as wealthy as the U. S. Treasury. Every time I see them they caution me that above everything else they want a good heating system that will keep an even temperature without drafts, so you see I'm being exceedingly careful with the heating on this job. I am planning to use a high-grade concealed radiator under every window, automatic temperature control with a thermostat in every room, a good vapor system, and a gas fired boiler."

"That sounds like the right start to a bang-up job, I would say."



The photograph above shows an air conditioned hall. Although it is not the one described in this article, it indicates one type of successful installation. Fig. 1—At the right is the floor plan of the stair hall which heated unevenly and which was drafty

"Yes, we've made a good start, but it's the finish that wins any race. We simply must have an almost perfect heating system."

"What part is it, Mr. Andrews, that is bothering you?"

"This two-story stair hall," he said, as he laid out the preliminary plans. "You see, the hall will be two stories high with a large entrance door and two windows on one side and the stairs and three narrow high windows on the other side."

"I've always had trouble with halls like this and I want to be certain that this one will be satisfactory from the start. I know that you have had a great deal of experience with such problems and I have heard that recently you succeeded in fixing up the Hanover residence in Sterling, so that is why I called you. This hall is similar to the one in Hanover's residence, isn't it?"

"They are very much alike."

"I wish you would tell me about that job before we start on this one. I've heard a great deal about it and I'm sure it would help me to know the real facts of the case."

"I'll be glad to, but I'll have to do part of my talking with a pencil," I said, and I made a sketch of the Hanover stair hall showing the old heating arrangment. (Figs. 1 and 2.)

"There is a small entrance hall which is separated from the central hall by doors. This hall is heated by two concealed radiators, one on either side of the door. These two radiators are controlled by a separate thermostat located in the entrance hall. This arrangement has always worked very satisfactorily and we did not change it in any way.

"The central hall on the first floor was heated by two 70 sq. ft. radiators as shown in Fig. 1. They were controlled by a thermostat located on the opposite side of the hall and alongside the stairs.

"The upper part, which is made up of the stairway and the second floor hall, was heated by two radiators located under the second floor windows. These radiators were 70 sq. ft. each and were controlled by a thermostat on the second floor."

"Didn't they have any radiators under the large window by the stairs?" the architect asked.

"No, you see, that window came all the way down to the floor of the landing and there was no place for a radiator."

"Why didn't they install a radiator on either side of this large window?"

"The walls are curved on both sides of the window. I suppose they did not want to use curved radiators. They had plenty of room behind the false curved walls but they did not use it."

"I can see several reasons why Hanover might not have been satisfied, but just what did happen?"

"The complaint was that the stairway and lower hall were drafty. The first time I visited the job, it was about 10 deg. or 15 deg. above zero, with a fairly strong wind blowing against the west wall, which was the wall next to the stairway. The entrance hall was being maintained at 72 deg. F. and was very comfortable. The thermostat in the lower central hall was keeping its radiators wide open all the time but the thermometer on the thermostat never showed more than 65 deg. F. and there was a very pronounced draft on the landing, down the lower flight of stairs and into the central hall. The thermostat on the second floor hall kept its radiators open only part of the time and the thermometer showed a constant temperature of 72 deg. F.

"It was quite obvious what was wrong. The radiators were improperly placed. I roughly checked the heat losses and found that the designer had installed enough

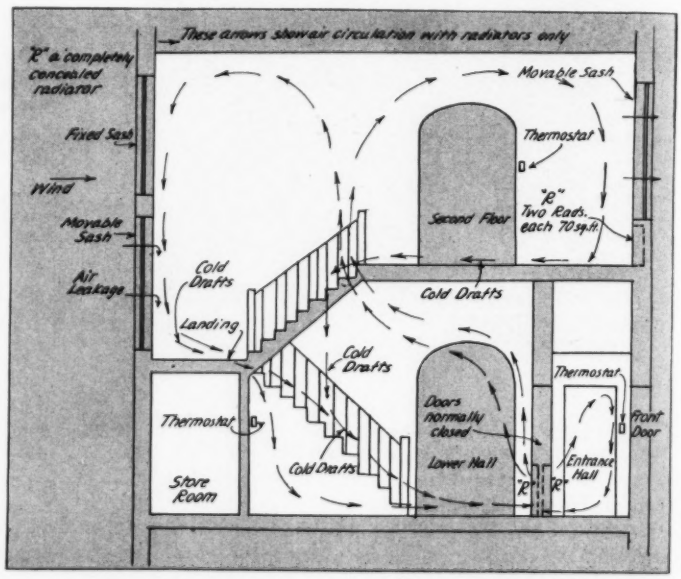


Fig. 2—This elevation of the stair hall shows very clearly why the heating was uneven. Note how the drafts were caused

radiation but for some reason he put half of it in the lower hall and the other half on the second floor under the windows. I don't know why it was done this way, but as I said before, it is very likely that he hesitated to use curved radiators and did not want to put any more than a minimum amount of radiation in the fancy lower central hall.

"The air was circulating about as shown in Fig. 2. The great majority of the heat from the radiators in the lower central hall was ascending to the second floor level through the stair opening and was helping to heat the second floor, with the result that there was not enough to heat the central hall. Because of this heat from below, the thermostat on the second floor kept its radiators shut off part of the time and there just wasn't any heat available for the stairway. Due to the high air leakage through the immense stairway window, the stairway needed heat more than any other part and received practically none. Naturally it was cold. To make matters worse, the cold air which leaked in through the stairway window all flowed down the stairs to the first floor, making the entire path of this cold air very drafty. Mr. Hanover's patience, I could see, was about at an end. You know him, don't you?"

"Yes, I play golf with him once in a while. He has a great deal of patience usually, but there's an end to everything."

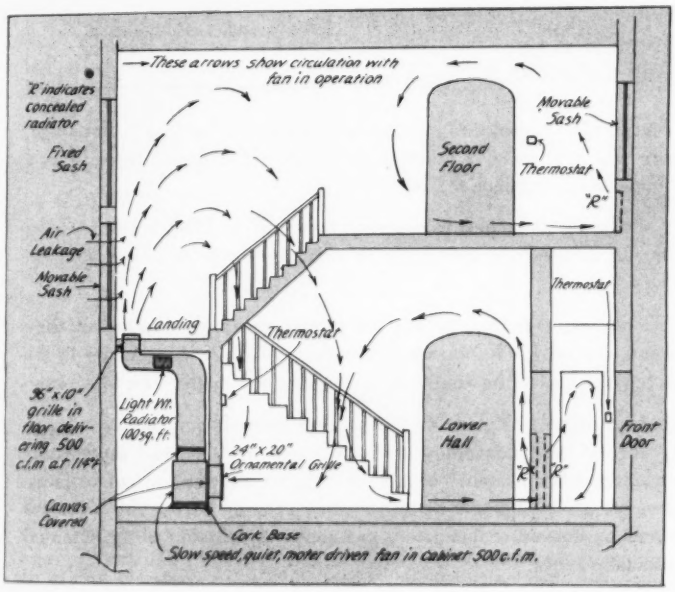
"I didn't blame him for he had had that drafty condition to contend with for at least two years. Anyway, he was ready to spend some money to cure the job, which helped me a lot.

"After I had the cause of the trouble clear in my mind, I explained the whole matter to him. He is a very thorough old gentleman so I had to show him the air currents by blowing smoke all over the place until I was almost sick. Have you ever smoked under forced draft in order to trace air currents?"

"Yes, it soon upsets even a hardened smoker."

"By tracing the air currents, which I have shown by arrows in my sketch, I convinced him that I knew what I was talking about, so he asked how it could be remedied. As I said before, I had checked the radiation and found that they had more than enough installed, but too much of it was on the second floor. It was all concealed radiators and the walls were very beautifully decorated, so I decided it would be less expensive to leave all of the radiators where they were and to add new ones rather than to move any radiators and redecorate the walls.

Fig. 3—Here is how an additional radiator and fan remedied the faulty heating shown in Figs. 1 and 2. The whole problem was one of distribution and circulation



"It was necessary to add 100 sq. ft. of radiation to heat the stairway, for I was sure that when that stairway was properly heated, the cold drafts and uneven heating of the halls would disappear. I considered and rejected several schemes. First, it seemed that the thing to do was to put the concealed radiators behind each of those curved walls, but that meant redecorating and was not entirely satisfactory because I wanted to locate the radiators *below* the window if possible. Another scheme was to put a radiator on the side of each stairway on the first floor level, but I found we couldn't install enough radiation to fulfill the requirements. After looking around for a while I hit upon the idea of installing a small fan in the store room under the landing, arranging it to draw air from the first floor level and to blow heated air up in front of the stairway window through a grille in the floor of the landing." See Fig. 3.

"Didn't the two grilles mar the appearance of the hall?"

"No, I don't believe they did, for you see we used heavy cast grilles of a design which harmonized with the other decorations."

"How much air did you circulate?"

"About 500 cubic feet per minute."

"How did you arrive at that?"

"I decided that we would circulate the air in the west half of the hall at the rate of 5 times an hour. The entire hall has a volume of about 12,000 cu. ft. and half of this is 6,000. Since we wanted to change or circulate this air 5 times an hour I multiplied $6{,}000 \times 5 = 30{,}000$ cu. ft., the amount we had to circulate in an hour. Dividing by 60, I found we needed 500 cu. ft. per minute."

"How large did you make the grilles?"

"The lower grille I figured on the basis of 300 cu. ft. per minute velocity and assumed that it would have one half free area or open area, $500 \div 300 = 1\frac{2}{3}$, the number of sq. ft. necessary. Since half of the grille is open, I needed $3\frac{1}{3}$ sq. ft. or 480 sq. in. of gross or total area, so we used a 24×20 in. register."

"How about the one in the landing floor? You couldn't blow air in through the floor at 300 ft. per minute, could you?"

"No, we used a velocity of 150 ft. per minute. Since this velocity was half as great as for the lower grille, the upper grille had to be twice as large, so we needed a grille having a gross area of $2 \times 480 = 960$ sq. in. We found that a 10-in. by 96-in. grille fitted in very nicely. When we painted the grille and the inside of the duct dark green it harmonized with the dark green carpet with which the landing was covered and was very inconspicuous."

"What kind of a fan did you use?"

"A special slow speed fan which runs almost noiselessly. We mounted it on cork and used canvas connections between the fan and the duct in both the intake and the outlet of the fan. Really that fan is so quiet that you cannot hear it unless you especially listen for it near one of the grilles. The radiator is located in the duct right under the landing, you see in this sketch." (Fig. 3.)

"At what temperature does the air leave the grille in the landing floor?"

"About 114 deg. Fahr. when the radiator valve is wide open."

"Is that all?"

"Yes, we circulated 500 c. f. m., which is 30,000 cu. ft. of air an hour. If this amount of air cools from 114 deg. Fahr. to 70 deg. Fahr. it will give off $\frac{30{,}000 \times 44}{55}$ or 24,000 Btu. because 1 Btu. will heat 1 cu. ft. of air 55 deg. Then 24,000 Btu. per hour is 100 sq. ft. because

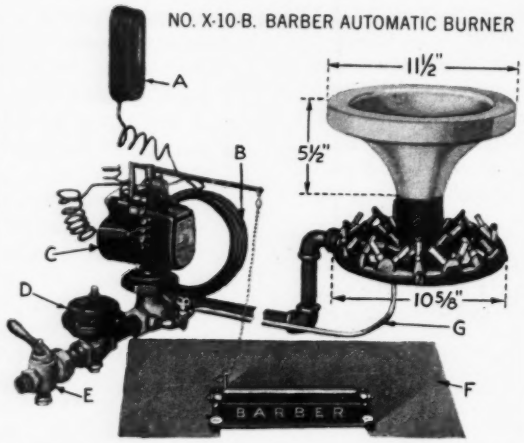
A Sensational Evolution in GAS CONVERSION BURNERS

An improved quality burner with unequalled price appeal—one that develops satisfied gas house heating Customers. Dependable, efficient, economical for fall, winter and spring

TEN IMPORTANT REASONS

- Noiseless
- Will Not Back-Fire
- Scientifically Built
- Requires No Servicing
- No Air Mixer Adjustment
- Will Not Deposit Carbon
- Quickly and Easily Installed
- Develops 1900° Flame Temperature
- For Furnaces and Boilers up to 22"
- Made to Convince Hesitant Prospects

NO. X-10-B. BARBER AUTOMATIC BURNER



NOTE THESE FEATURES

(A) No. 4010 Minneapolis Plain Thermostat.

(B) 25 feet of Insulated three cable wire for connecting thermostat.

(C) No. B-2210 Minneapolis Motor Valve.

(D) Barber Gas Pressure Regulator.

(E) ¾" A.G.A. Lever Handle Valve with Union.

(F) Butterfly Draft Door with Special Lift Assembly.

(G) Individual Pilot. Completely Assembled.

NOW there is a demand for NEW Manual and Automatic Controlled Gas Conversion Burners by Gas Companies, Gas Appliance Merchandisers and Heating Contractors—for five, six and seven room homes—that could be sold and installed at a moderate price and still prove durable, efficient, economical.

Barber Engineers have developed a high grade line of No. X-10 Burners to meet this demand—in FIVE models—from the Manual Control type to the completely Automatic with Safety Pilot control, in an amazing low price range, to meet sales resistance of all classes of hesitant prospects.

No. X-10 Barber Burners are not the cheapest on the market, even though they are priced amazingly low,—but they can be installed in less time and at less expense than any Conversion Burner on the market, which is a big factor in the initial cost to the home owner. They are NOT only for Spring and Fall heating, but for the entire Winter—year after year.

They are made of the best materials—at prices in keeping with DEPRESSION times. They provide a means of supplying Gas Heat, Comfort and Convenience—for average five, six and seven room homes for installation in the present Furnace or Boiler—without removing grates. The New Barber No. X-10 Burners do more—they actually prevent high gas bill complaints caused by uneven or fluctuating gas pressures, whether of the Manual Control or Automatic types.

Progressive Gas Companies, Gas Appliance Merchandisers and Heating Contractors can develop a large and profitable business upon these New No. X-10 Burners, if they will connect up in their show or display rooms, for Demonstration with Gas, No. X-10-M and No. X-10-B Burners—so that their customers may be shown their actual merits.

Check up upon the component parts of these new Barber Gas Conversion Burners to convince yourself that they have real merit—and contain the essential features to produce efficient and economical GAS HEAT—without waste.

Our new, liberal and attractive stock quantity discounts, together with our Sales Helps, will be sent immediately upon request. Write us without delay.

THE BARBER GAS BURNER COMPANY

3702-04 SUPERIOR AVENUE • • CLEVELAND, OHIO

1 sq. ft. is 240 Btu. per hour. Air at 114 deg. Fahr. is not hot enough to be disagreeable, is it?"

"No, it isn't. How are the new radiator and fan controlled?"

"By the thermostat in the lower hall that was formerly used to control the lower hall radiators. You see, the circulation when the fan is running is about like this." I drew in the arrows shown in Fig. 3. "The whole circulation revolves around the fan unit. The warm air blown out of the grille in the landing floor picks up the cold air which leaks in through the large window and the cold air which is cooled by the window, thus preventing this air from falling down the stairs to the floor. When the warm air from the fan reaches the ceiling it is pretty well cooled off, so it slowly drops to the first floor level and flows back to the fan through the grille. Of course there are a lot of little stray air currents, but the general circulation is about as I have shown it.

"The circulation set up by the fan is quite positive and it has a very pronounced tendency to keep the heat given off by the first floor radiators from rising to the second floor, and the first floor is no longer cooled by the cold air from the stairway. For these reasons the first floor is now heated very satisfactorily by its own radiators and it has worked out very well to control these first floor radiators and the fan radiator from the old thermostat.

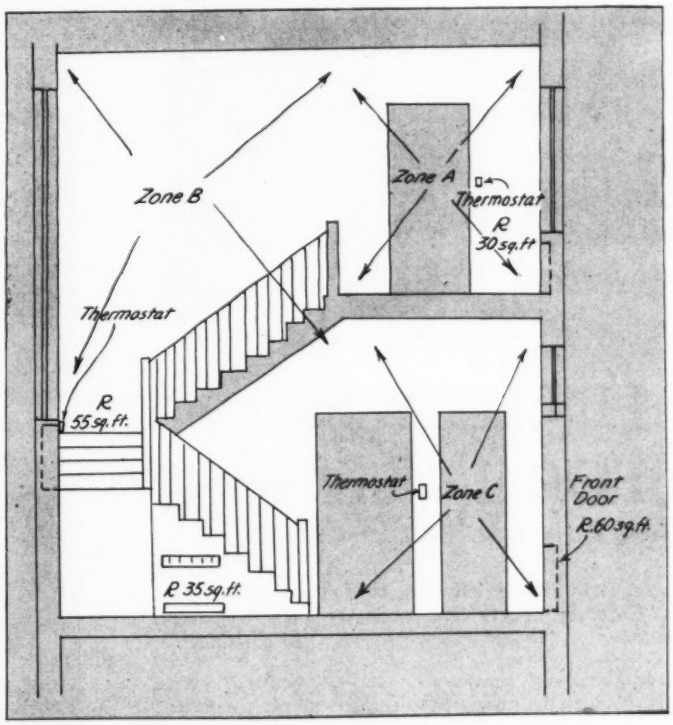


Fig. 4—This shows the three heating zones which were decided upon in heating the second stair hall problem. The elevation view shows the final heating arrangements which proved satisfactory

"We did not find it necessary to change the second floor radiators one bit or to do anything different with the thermostat setting or location. Since the flow of heat from the first floor to the second floor is greatly reduced, the second floor radiators have had to go to work. As they are now heating most of the time in severe weather, the drafts which were sometimes noticeable on the second floor have disappeared. Any leakage through the second floor windows is caught by the upward current of warm air from the radiators, now, and heated. Formerly when these radiators were shut off most of the time, this cold air dropped to the floor and caused drafts."

"Does the fan run all the time?"

"No we installed a thermostat on the return end of the radiator so that when the radiator cools, the fan is stopped, and when the radiator is filled with steam, the fan is started. In this way the fan runs only when the radiator is hot."

"That's a good idea. I would think the air from the grille in the landing floor would blow the window drapes around. Doesn't it?"

"It probably would, but there are no drapes at the windows. They are very fancy stained glass windows and no drapes are used."

"Is the old gentleman pleased with the results?"

"Yes, just like a child with a new toy."

"That is very interesting, indeed. Now, let's get back to my problem. How do you suggest heating this hall?"

Figs. 4 and 5 will serve to give an idea of the hall he had described.

"As I see the problem, we really have three separate zones to consider—we'll call them zones A, B, and C (Fig. 4) which must be figured separately. Now, figure the amount of radiation required for each zone."

Sixty sq. ft. was figured for Zone A, 200 sq. ft. for Zone B and 90 sq. ft. for Zone C.

"Now I'm going to suggest that you install only half of the figured amount or 30 sq. ft. in Zone A, and add the other 30 sq. ft. to Zone C, because some of the heat will go up there anyway and we want to be sure to have enough down below on the first floor level."

"Then you suggest 120 sq. ft. in Zone C?"

"Yes, or maybe more, depending upon how much luck we have in finding room for radiators in Zone B."

"We might install a concealed radiator under each of these three stairway windows," Mr. Andrews suggested.

"Yes if the radiators are not more than 30 in. high, 8 in. deep and 30 in. long. The one under the center window can be 40 in. long. That means that we can install 40 sq. ft. under each of the smaller windows and about 55 sq. ft. under the center window, making a total of 135 sq. ft. We still have to have 65 sq. ft. more."

Looking at the plans a little longer, I said, "We can install at least a 35 sq. ft. radiator on each side of the stairs to the first landing, can't we?"

(Continued on Page 107)

"Somebody FINALLY built a boiler-feeder FOR the contractor!"

(And it happened to be McDONNELL & MILLER)

YES, one contractor *said* that and a few hundred more must feel that way about it, judging from the tremendous welcome accorded the No. 37 Automatic Boiler Water-Level Control.

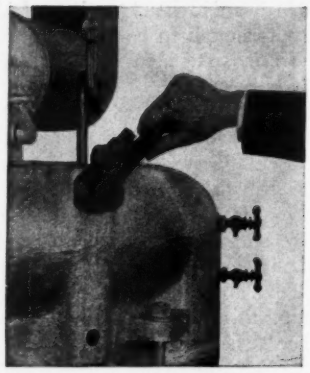
The quick hook-up feature *is* a feature *for* the contractor—the secret of its popularity. Note the story of simplified installation told by the photographs opposite. This means that a feeder of highest possible quality can be sold to the *big* market—the myriad owners of boilers under 2500 feet—at a price the small-boiler owner can afford to pay.

Prospects who once said "No," are now saying "Yes." The No. 37, combined with the No. 35 Low-Water Cut-off Switch, makes a tremendous appeal to oil-burner owners—people who have had a taste of automatic heat and want to go all the way by making the boiler water level as automatic as the firing.

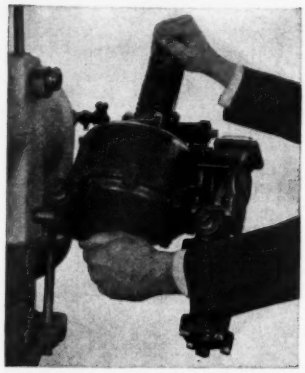
Hundreds of contractors are making extra profits out of No. 37 sales—are you getting your share? Remember that the McDonnell proposition includes posters, imprinted circulars, complete installation data and anything that will help you sell. Write.

McDONNELL & MILLER
400 North Michigan Avenue Chicago, Illinois

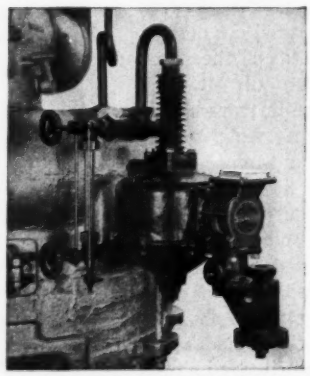
McDONNELL automatic boiler water level CONTROL



Remove water-glass and install male union in upper gauge-cock tapping.

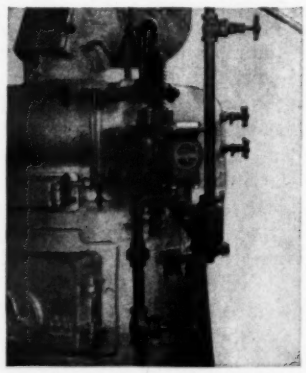


Insert nipple in lower tapping and swing feeder to tighten nipple (nipple is furnished).

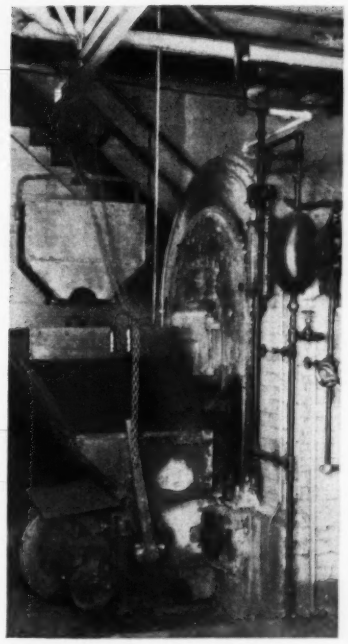


Move goose neck until upper union meets. Then install gauge glass on feeder as shown.

(Goose neck makes feeder adjustable to any boiler under 2500 square feet.)



Connect city water and direct feed pipe to return piping in bottom of boiler.



Hand Firing vs. the Stoker

—actual test data show economies that pay for the stoker installation

By T. R. SHAVER

A COMPANY owning and operating a number of buildings in one city recently has become a large user of stokers, after careful testing and investigations to determine the actual merits of stoker versus hand firing.

Most of the buildings in this group are equipped with boilers of 150 hp. or less, and of low pressure, used only for heating purposes. Since they have very few larger plants, or high pressure installations, this article will be limited to the stoker installations in the typical plants.

In 1928 two stokers were installed in a building of 90,450 sq. ft. rentable area, volume 2,130,000 cu. ft., one in each of two 165 hp. horizontal return-tubular boilers. The connected radiation load in this building is 19,684 sq. ft. This installation was followed in 1929 by one stoker each in two more buildings, the largest of these being of about 36,000 sq. ft. rentable area, 750,000 cu. ft. volume and with 9,000 sq. ft. of radiation. In each of these two buildings there are two boilers. One is now used as an auxiliary in each case. Three more buildings were similarly equipped in the fall of 1930. At the start of the fall heating season of 1931, then this company had seven stokers operating in six buildings.

Steam requirements which this company has to meet are so great, on account of the number of buildings operated by them, that tests of boilers and fuels are conducted constantly during the heating seasons, to assure maximum efficiency in this important operation. Since the installation of the stokers, tests have been broadened to give authoritative data on stoker operation. The usual tests which have been made were run to determine the most efficient fuel for the different plants, also, the different types of stokers were tested. But, most interesting of all, and most important in its effect on future policies of the company, were the tests made to compare the actual costs of stoker and hand firing operation of boilers. In these tests the plants were run exactly according to usual running conditions, and no attempt was made to set up laboratory conditions. All charges such as electric power cost, interest on investment, depreciation and servicing, properly appearing against stoker operation, were included, and the actual cost of time of employes available for other work after stoker installations was credited. The tests and calculations included every factor having a bearing on the cost of running the boilers.

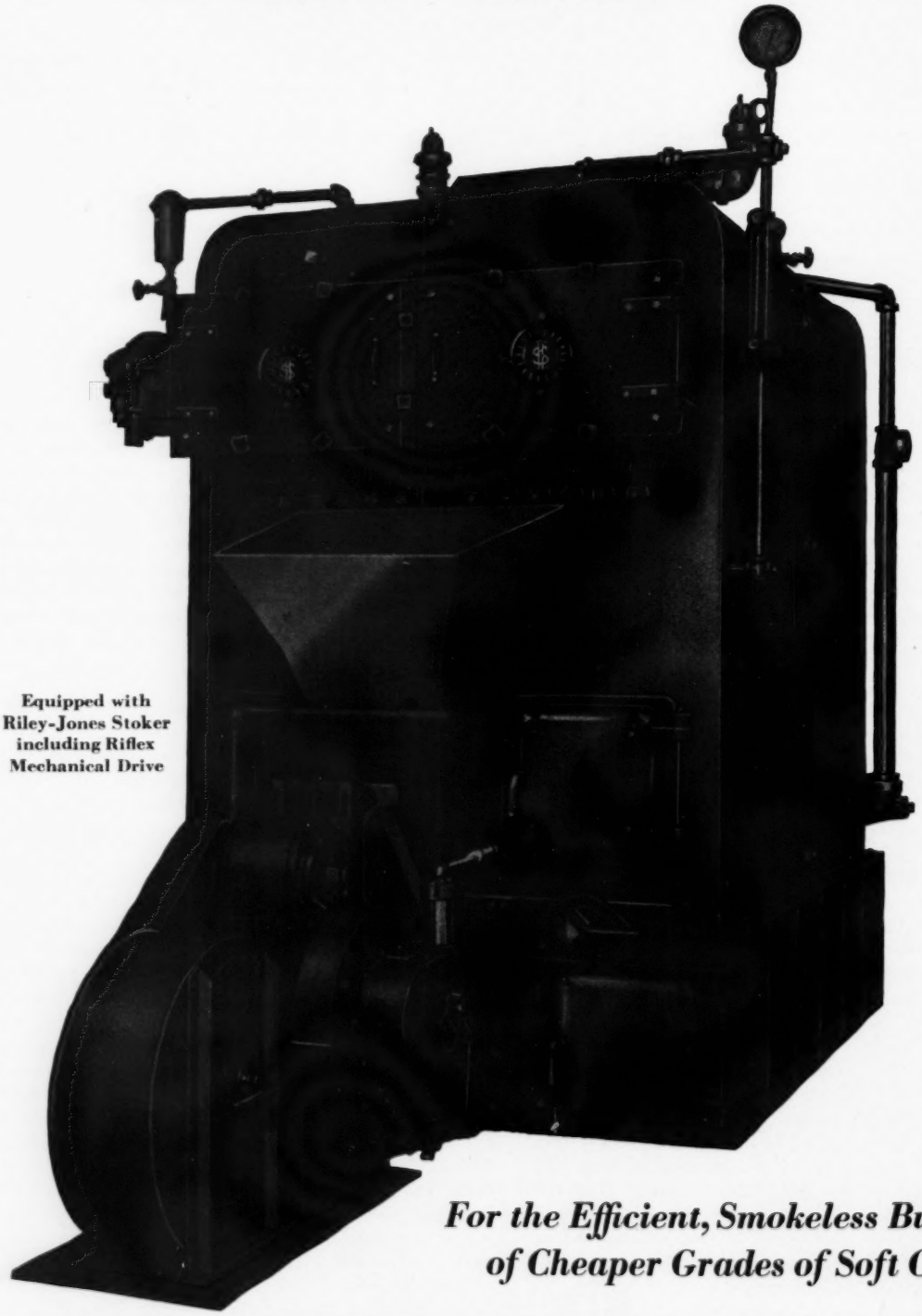
The conclusion from the tests was that stoker firing was invariably economical, although far from being uniformly so. There are many kinds, sizes and ages of boilers, and the results were equally diversified. It was found, for example, that the cost of a stoker might be equal to operating economies for five heating seasons; or, in other words, it might take as many as five seasons' savings to pay for a stoker. On the other hand, in one of the installations tested it was found that the stoker would pay for itself out of savings in one and one-quarter seasons. For an average, it was found that three seasons were required to pay for a stoker.

The test data was such conclusive evidence of the economy of stoker over hand firing that twelve more stokers were put in that many additional buildings during the 1931-32 heating season. These installations were all in two-boiler plants where work could be carried on during the winter. Following this program, eight stokers were put in single-boiler buildings during the summer of 1932. This completes the stoker equipment of this company's properties, with a total of twenty-seven stokers in twenty-six buildings. Twenty-four of the buildings were finished and occupied some time before the installations of the stokers. Three buildings are left without stokers, as their expected use is not long enough to make such equipment a profitable investment.

In every case, in these buildings, boiler capacity for

The New **SPENCER**

STOKER—BOILER UNIT



Equipped with Riley-Jones Stoker including Riflex Mechanical Drive

For the Efficient, Smokeless Burning of Cheaper Grades of Soft Coal

A COMPACT HEATING UNIT

SOLD ONLY THROUGH HEATING CONTRACTORS

THE Spencer Heater Company offers to engineers and heating contractors a stoker and boiler in combination — a unit of established capacity and efficiency. Instead of the divided responsibility that follows the usual stoker and boiler installation, the complete unit is guaranteed by the Spencer Heater Company.

The unit consists of a combination water tube and fire tube boiler built in two sections for accessibility in replacement work, and the Jones Side Dump Ram Type Stoker, of long established merit as to efficiency and durability.

No brick or tile is required at any point in the setting of the unit. The combustion chamber is entirely surrounded by water walls — having a built-in bridge wall connected to both the side and back water walls. The dimensions of the combustion chamber, particularly in height, are such as to provide for most efficient and smokeless combustion when burning high volatile, cheap fuels. The unit controls furnished with the Stoker insure unusually flexible firing — the air supply and feeding of fuel being at all times perfectly synchronized.

The Spencer Stoker-Boiler Unit is a balanced product, both in construction and operation. It simplifies the work of the engineer and estimator. It eliminates expense in erection and gives to the owner a quietly operating heating unit of assured capacity and efficiency, under the responsibility of one manufacturer. Range 6,000 to 40,000 sq. ft.

Write for descriptive booklet.

SPENCER HEATER COMPANY, Williamsport, Pa.

Division of Cord Corporation

This shows how one of the stoker installations described in this article was provided with a mono-rail and traveling coal conveyor. This was worked out in cases where the coal bin was located some distance from the stoker

the load was ample, so there was no necessity for increasing the amount of fuel consumed and accordingly providing an enlarged combustion space for efficient consumption of fuel. They find that with one cubic foot of boiler combustion space for every 50,000 Btu. released per hour, operation will be efficient and free from smoke nuisance.

As would be expected in a project of this size, the matter of operation and servicing of the stokers has been studied carefully. The plants are tended by janitors who are kept busy at some work about the buildings during all of their time. Filling stoker hoppers and removing ashes requires two hours of a man's time in twenty-four hours at an average building. (The same average

The data at the right show in detail what was looked for, and the results, in testing the several stoker and hand-fired jobs. One interesting feature is the increase in ash content in the cheaper coals. It should be understood that these tests were conducted in a specific locality with its own weather conditions, and with definite equipment. Accordingly, this data is not offered to represent any and all stoker jobs and any and all coal

	Stoker Firing			Hand Firing
	Test No. 1	Test No. 2	Test No. 3	Test No. 4
General Data				
Coal Cost per Ton	$6.00	$5.15	$4.90	$6.25
Boiler Grate Surface in Sq. Ft.	16½	16½	16½	16½
Water Heating Surface in Sq. Ft.	546	546	546	546
Rated Capacity in Sq. Ft. of Radiat.	5500	5500	5500	5500
Fuel Analysis (as received)				
Volatile Combustible Material	35.47%	33.62%	33.47%	32.30%
Fixed Carbon	56.33%	49.62%	48.97%	51.02%
Ash	4.95%	8.33%	8.15%	8.79%
Moisture	3.25%	8.43%	9.41%	7.89%
Sulphur	0.74%	0.91%	0.95%	1.83%
Heat Value, B.t.u. per lb. (as rec'd)	13,798	11,997	11,972	11,957
Heat Value, B.t.u. per lb. (dry)	14,262	13,101	13,218	12,981
Pressures—Aver. of 8 hourly readings				
Barometer (absolute)	14.5	14.5	14.5	14.4
Steam (absolute)	14.75	14.75	14.8	15.6
Temperatures—Aver. of 8 hourly readings				
Outside (deg. F.)	42	42	41	47
Flue Gas (deg. F.)	493	472	499	427
Feed Water (deg. F.)	43	42	41	41
Total Quantities				
Coal as Fired, Lb	1238	1510	1434	1395
Dry Coal, Lb	1198	1383	1299	1285
Dry Refuse, Lb	60	110	170	90
Feed Water, Lb	10,682	10,064	9,054	10,632
Duration of Test, Hrs.	8	8.67	8	8
Misc. Data				
Draft in Breeching, Ins.	0.49	0.43	0.42	0.41
Draft over Fire, Ins.	0.25	0.31	0.18	0.33
CO in Flue Gas, per cent.	8.1	9.4	9.7	10.5
Estimated Quality of Steam, per cent	98	98	98	98
Total KW Hours	7½	6½	6	.....
Evaporation				
Actual Lbs. Water Evap. per Lb. of Coal as Fired	8.63	6.67	6.32	7.62
do for Dry Coal	8.92	7.29	6.97	8.28
Equivalent Evap., Lb. of Water from and at 212 degrees, per Lb. of Coal, as Fired	9.96	7.70	7.30	8.82
do for Dry Coal	10.29	8.43	8.06	9.58
Efficiency of Boiler, Furnace and Grate	70%	62.4%	59.2%	72.1%
Capacity				
Rated Capacity, H. P.	39.6	39.6	39.6	39.6
H. P. Developed	44.7	38.9	37.9	44.6
Per cent of Rated Capacity	112.9	98.2	95.6	112.6
Cost per 1,000 Lbs. Condensate				
Coal	$0.348	$0.386	$0.389	$0.410
Electric Power	0.012	0.011	0.011	.....
Labor	0.056	0.060	0.066	0.132
Total	0.416	0.457	0.466	0.542

The above tests were made in a building having two identical boilers. One of the boilers was equipped with a stoker. Each of the four tests was made under average operating conditions.

The table at the right contains additional data which show the advantage of stokers over hand firing. This represents boiler room tests under actual working conditions

building required six hours for hand firing.) In addition to keeping his hopper supplied, each janitor is instructed to check up the grease in the gear box of his machine, at stated times. Each janitor is taught how to remove obstructions from his machine and start it in operation again. A chart in each boiler room shows a diagram of the stoker and carries a set of written instructions for reference, so the man in charge will never be in doubt as to his proper procedure. A yearly cleaning, greasing and checking is part of the maintenance program.

In order to get the greatest economy from boilers this company has made it a practice to determine the coal most suitable for each boiler, and use that fuel exclusively. They are following this same practice in their stoker installations. Due to the different kinds of boilers and stokers installed several grades of coal are used, each where it secures the most economical results. In order to cut down time necessary for attendance, most of these stoker hoppers have been enlarged by having the sides extended upward to increase their carrying capacity. In some of the boiler rooms, where the coal storage is not convenient to the stokers, provisions have been made to move the coal from the bin to the hopper by means of small mono-rails.

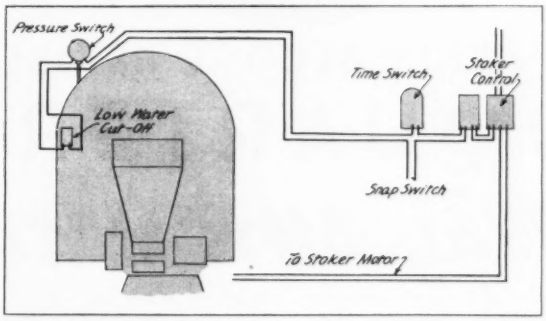
Since all the stoker installations have been completed, the company is putting in instantaneous type submerged heaters in fifteen of their boilers. Previous to this program they had five such installations for domestic water heating. They are convinced that using the boiler for water heating in the summer, or non-heating season of about four months, costs about the same as operating a separate water heater, and that there is a good saving in the former method during the eight months heating season. The installation of the submerged heaters when carried out as planned will thus remove hand firing completely as far as twenty of the buildings is concerned. In those buildings which are not to be equipped with submerged heaters, the large quantity of hot water required or the presence of rubbish to be burned made it inadvisable to change from the present separate heaters.

(Continued on Page 110)

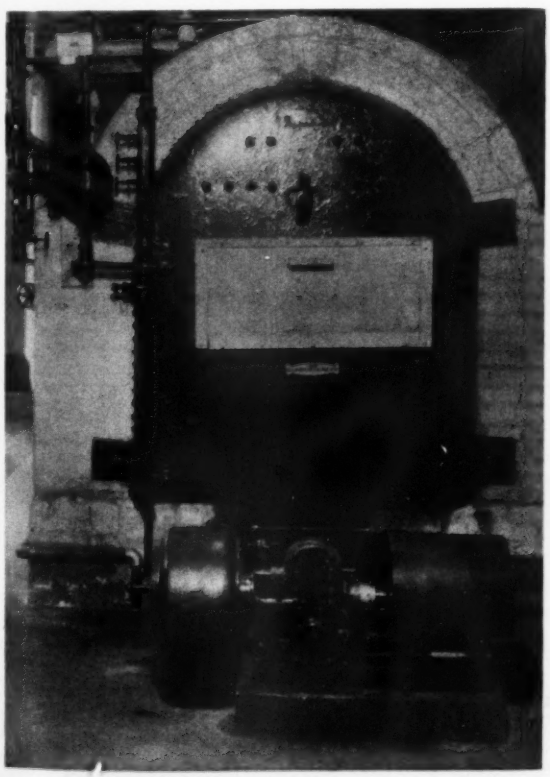
Following are some further data on comparative costs of stoker and hand firing of boilers:

	Hand Firing Averages for Seasons 1925 to 1928, incl.	Stoker Firing Averages for Seasons 1929 to 1931, incl.
Tons of Coal	276	200
Cost of Coal per Ton	$6.25	$6.00
Total Cost of Coal	$1725	$1200
Labor Cost	$840	$280
Power Cost	....	$16
Interest, Deprec., Taxes, etc., (on Stoker only)	....	$258
Total	$2565	$1754
Degree Days	6000	5207
Cost per Degree Day	$0.427	$0.336

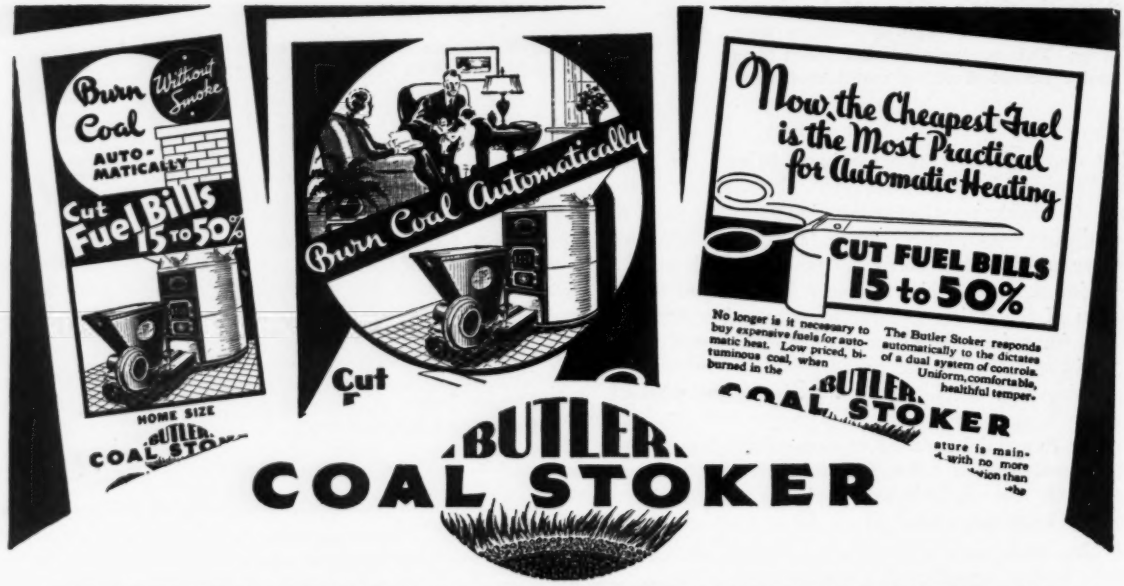
Saving of stoker firing over hand firing 21.3 per cent.



This diagram indicates how the operation of a typical stoker in these installations is controlled. Time conditions, pressure conditions and water conditions, all must be satisfied before the stoker will operate. The hand switch also controls



Here is another of the stokers installed. In all cases, it was a matter of comparing stoker operation and efficiency with hand firing. Each installation sold the next one. The different plants, of course, governed the size of the savings in each instance


Burn Coal Without Smoke
AUTOMATICALLY
Cut Fuel Bills 15 to 50%
HOME SIZE
BUTLER COAL STOKER
Burn Coal Automatically
Cut
Now the Cheapest Fuel is the Most Practical for Automatic Heating
CUT FUEL BILLS 15 to 50%
No longer is it necessary to buy expensive fuels for automatic heat. Low priced, bituminous coal, when burned in the
The Butler Stoker responds automatically to the dictates of a dual system of controls. Uniform, comfortable, healthful temperature is maintained with no more attention than
BUTLER COAL STOKER

DEALERS QUICKLY BECOME ESTABLISHED AS HEADQUARTERS FOR ECONOMICAL AUTOMATIC HEAT

THERE are sound, fundamental reasons why distributors and dealers taking on the Butler Stoker franchise from 30 to 90 days ago are ordering in quantities up to car load.

1st—Six long years of development before the Butler organization, with a 30 year old reputation for quality equipment and an AAAI financial record of long standing, put the Butler Stoker into production.

2nd—The advanced design, patented system of air distribution, adjustable regulation of air flow, unique, silent, selective transmission which changes fuel feeding speeds without shifting a single gear, positive back smoke eliminator and dual automatic control system make of the Butler a bituminous coal stoker unrivaled in efficiency, unmatched in simplicity of design and in operation.

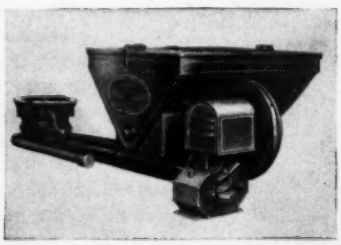
3rd—Flexibility of regulation to handle practically all grades of bituminous stoker coal and 11 sizes enable the dealer to sell greater heating efficiency in all fields from the small home to the commercial power boilers up to 260 H. P.

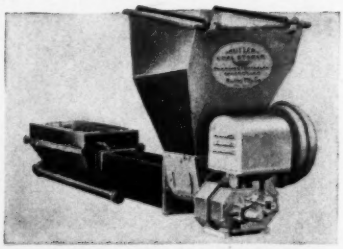
4th—Priced from $275.00 upward, f. o. b. foctory complete with controls, ready to install.

5th—Comprehensive installation, service and sales manuals and a competent staff of combustion engineers give Butler dealer organizations the advantage of years of experience at the outset.

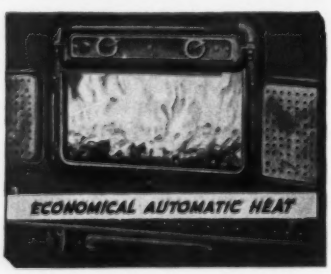
6th—A full fledged point of sale advertising plan in the dealers' local newspaper, over the dealer's name, paid for by the manufacturer, plus effective mailing material puts the dealer immediately before the public as local Headquarters for Economical Automatic Heat.

Get into this flourishing new field of business. Get into it right with the Butler Coal Stoker.





SEND FOR THIS BOOK TODAY



BUTLER MANUFACTURING COMPANY,
1263 Eastern Ave., Kansas City, Mo. 963 6th Ave., S. E., Minneapolis, Minn.

- ☐ Send copy of Butler Stoker Book "Economical Automatic Heating".
- ☐ Advise if.....territory is open.
- ☐ Send district representative when conveniently near.
- ☐ Have him call as soon as possible.

BUTLER COAL STOKER

Firm Name.....

By.....

Address.....

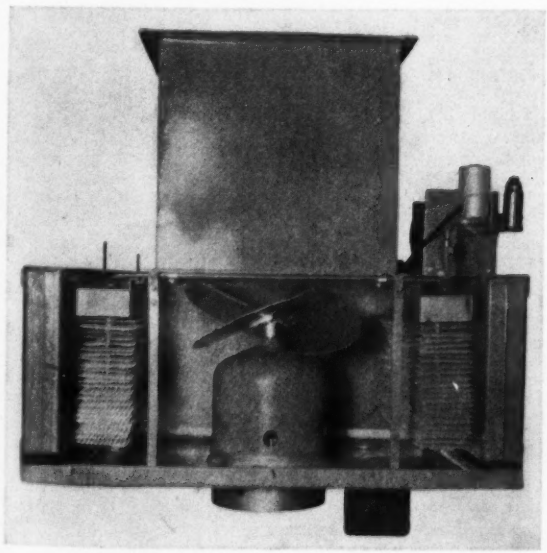
City..... *State*.....

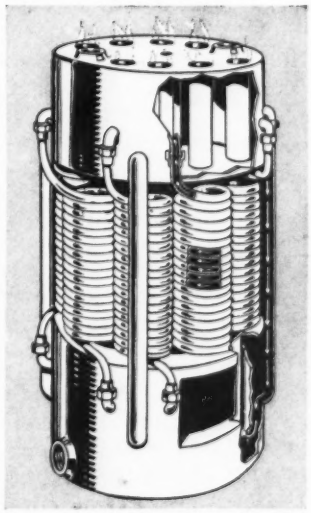
New Developments in Products for Dealers

Our numerous readers who are automatic heat and air conditioning dealers, or who soon may be, are offered in this section news of the latest developments in this field. Here are a selected group of items which have been produced to assist the dealer in his sales efforts

Unit for Circulating, Filtering and Humidifying Air

The unit shown here has just been placed on the market for circulating, filtering and humidifying air in homes without the use of a duct system. It is rated as being capable of producing a complete change of air in the lower part of a house in 40 minutes, or about 1½ air changes per hour. The humidity control device is built into the unit to measure the relative humidity of the air and to automatically control the amount of moisture evaporated. As for humidification, its capacity is listed as adequate to take care of the demands of homes having a volume not exceeding 50,000 cubic feet. Its filtering capacity likewise is listed for a volume of about 15,000 cubic feet. The unit is installed in the first floor and air is discharged through a floor grille. This air is taken from the basement, it is passed through a filter and thence through the humidifying chamber. Hot water is used in the humidifier to facilitate evaporation. A small amount of steam supplied by the existing boiler heats this water. The air is brought back into the basement through a return grille at the far side of the house. The General Electric Company at 1 River Road, Schenectady, N. Y., is the manufacturer.

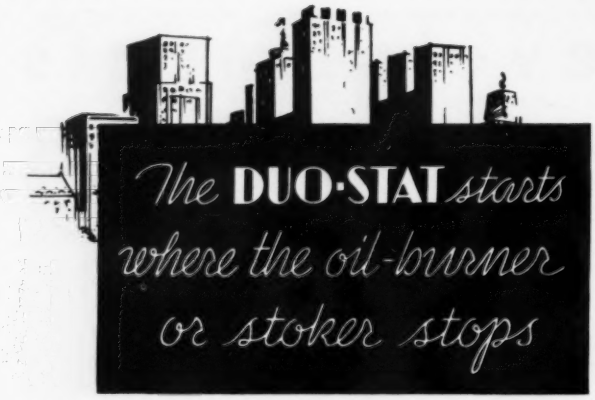




Boiler for Burning Oil or Gas

There has just been placed on the market a boiler which has been built for operation with either oil or gas. The operation of adapting it for either fuel has been described as consisting essentially of removing the one burner apparatus and substituting the other. When shipped it is fully assembled and sealed in three crates and to be installed, it is only necessary to remove the packing box and make the connections to the heating system and fuel lines. The complete unit consists essentially of the base, upon which the boiler is set; the burner, which includes controls and which is assembled as a part of the base, and the boiler which is a steam or hot water generator surrounded by the insulating jacket of the boiler.

Domestic hot water for both summer and winter is obtained by the addition of an indirect heater. During the summer months when no heat is required, the water temperature control in the domestic hot water supply



—Make it the "other half" of automatic heat!

The greatest value of a stoker or oil burner lies in the fact that it can be *controlled.* A stoker can cut the cost per pound of steam delivered—but it can't cut the number of pounds required. *Good* control can. It starts where the stoker stops. It completes the picture—often doubles the economy.

The Duo-Stat is rapidly becoming the standard of comparison for heat control systems. Its protected principle enables a moderately priced system to do what even the most expensive systems have been unable to do.

One bulb of the Duo-Stat is placed outside, the other on the last radiator of the longest main. The Duo-Stat constantly balances radiator temperature against outdoor temperature. Will it control all radiators alike? Will it accomplish partial filling and "throttle" down to mild weather requirements? Thousands of installations say YES! Ask for evidence.

You can install a complete automatic-heat plant *with* Duo-Stat control for less than the cost of many elaborate heat control systems *alone.*

Let us show you how you can make the Duo-Stat an entering wedge to profitable remodeling—how it can be made to lower sales resistance on stoker or oil-burner sales.

F. I. RAYMOND CO.
629 W. Washington Blvd.
Chicago, Illinois

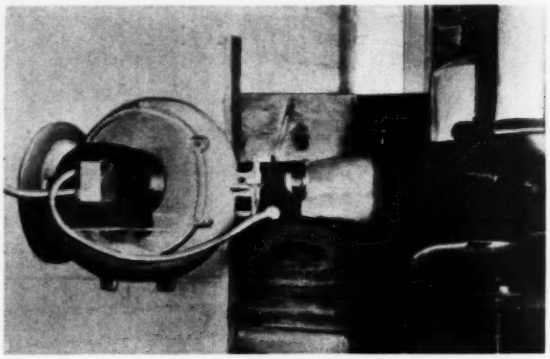
RAYMOND

DUO-STAT

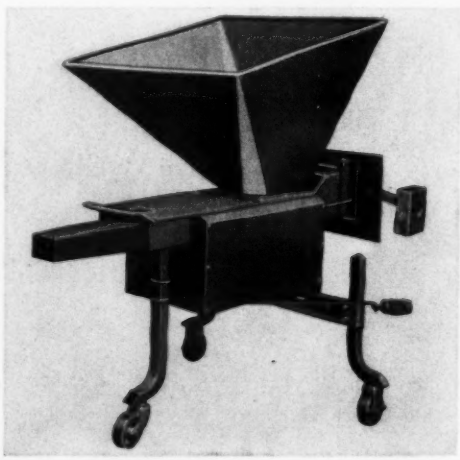
tank controls the burner operation. This unit is the joint product of the American Radiator Company, 40 West 40th Street, New York, N. Y., and the Petroleum Heat and Power Company, located at Stamford, Connecticut.

Blower Provides Forced Draft

Here is an item which is mounted on the chimney at the flue pipe opening. It has been designed for controlling the burning of coal or coke. The controls are connected to the room temperature regulator so that

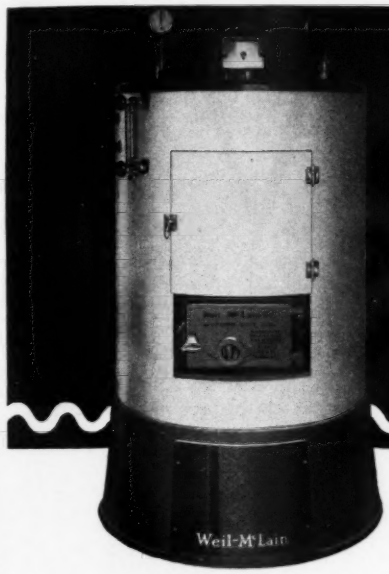


when the room temperature falls below a designated point, the blower is started automatically to increase the draft and thus increase the intensity of the fire and the heat delivered to the rooms. The blower stops when the correct room temperature has been attained. The connection to the chimney has been made so that the entire unit can be removed after temporary use, with the idea of making the item of interest to tenants. It is manufactured by the Vacu-Draft Corporation, Muncie, Ind.



Over Feed Stoker Is Announced

An announcement has just been made of an over-feed stoker being placed on the market designed for use in the average sized home of from 6 to 12 rooms. The fuel



YOU CAN SELL THIS BOILER NOW!

New Weil-McLain Oil Burning Boiler sells readily on today's market because it meets today's new demands . . .

THE new Weil-McLain Oil Burning Boiler arms you with *every feature* you need to cash in on today's rapidly expanding oil heating market. This new boiler is *built to work with domestic size oil burners.* It meets today's demands with features that *save fuel* and *cut costly waste.* It makes many of the *most vital* contributions to the *economy, comfort, convenience* and *efficiency* of oil heating since the development of the oil burner itself.

In many domestic size oil boilers, fire chambers vary from approximately square to extremely oblong in shape. In such cases, when fire chamber proportions are correct, length of fire travel is not. And, vice versa, when length of fire travel is correct, fire chamber proportions are not. In other words—*improvement in one* is obtained *at the expense* of the other!

But not in the new Weil-McLain Oil Burning Boiler. In this boiler, the *diametric width* of the *round* firepot is *increased* to provide an *extended hearth* and the *extra combustion space* vitally essential to efficiency when burning oil. *Width* and *length* of firepot are always the *same.* Long fire travel is *preserved without robbing the combustion chamber* of its efficient proportions. The oil burner is *never* cramped, crowded or choked by a narrow fire chamber—(as is often the case with other types of boilers). A *scientific balance* between *all* boiler portions is thus *achieved!*

Furthermore, the *tried* and *proved fuel-saving* and *heat-utilizing* features for which all Weil-McLain Boilers are famous have been preserved:

CORRUGATIONS LIKE THIS ~~~ in all vital heating surfaces *add 30% more heat-absorbing surface*—increase the heat-absorbing *ability* of this boiler.

WIDE WATER CHANNELS, particularly in the combustion section, bring *more water* into this area of *greatest heat concentration,* assuring *quick response*—more heat *quickly* when more heat is wanted, at *less fuel cost.*

LONG "SMOOTH-FLOW" FIRE TRAVEL enables this boiler to *utilize* more of the heat produced by the oil burner; there are no short cuts to the chimney.

Complete details about this new boiler are vitally essential to you if you want to keep abreast of the latest developments in domestic oil heating and *cash in on this big, new market.* Sent without cost or obligation upon request. Write today for this valuable information.

WEIL-MCLAIN COMPANY
General Offices: 641 W. Lake St., Chicago
NEW YORK OFFICES: 501 Fifth Avenue
Boiler Division: Michigan City, Indiana
Radiator Division: Erie, Pennsylvania

• • •

FRONT CROSS SECTION VIEW OF 7-SECTION WATER BOILER

The most effective surface of the total surface of *any* flue is the *upper horizontal portion.*

Note that the Weil-McLain Oil Burning Boiler has *wide* flue ways in which this important *upper horizontal* surface is many times *greater* than less effective vertical surfaces.

Note also that the upper horizontal surfaces of the flues are corrugated, like this ~~~ instead of flat, like this ———, thereby crowding in still more *heating surface* where it is most valuable for economy and efficiency.

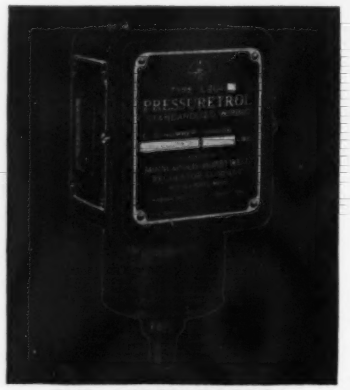
Weil-McLain
SCIENTIFIC COMBUSTION BOILERS
FIGHT FUEL WASTE AND DELIVER MORE HEAT

NEW

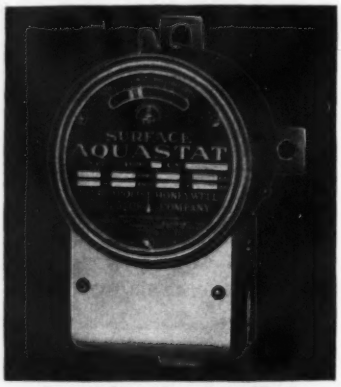
LIMIT CONTROLS

at the

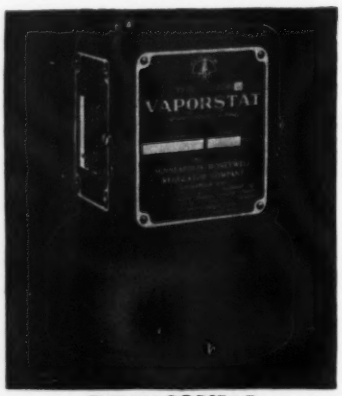
Lowest Prices Ever Offered



THE PRESSURETROL
For low pressure steam boilers



THE SURFACE AQUASTAT
For hot water systems



THE VAPORSTAT
For vapor systems

MINNEAPOLIS-HONEYWELL presents a new line of limit controls with improved performance at the LOWEST PRICES EVER OFFERED. These amazing price reductions (approximately 50 per cent) are made possible by simplified and standardized design without sacrifice of the traditional Minneapolis-Honeywell quality. The rugged simplicity, extreme accuracy, close operating differential, visible scales, outside setting and leveling and locking devices, insure efficient operation, complete satisfaction and full protection for your burner. Their new low prices enable you to include limit controls on every job, large or small, old or new. Minneapolis-Honeywell Regulator Company. Executive Offices, 2801 Fourth Avenue South, Minneapolis, Minnesota. Factories: Minneapolis and Elkhart and Wabash, Indiana.

Branch and Distributing Offices: Boston - Providence - Lowell - Springfield - Chicago - Peoria Cleveland - Detroit - Milwaukee -Madison Duluth - New York City - Hartford - Bloomfield - Syracuse - Philadelphia - Baltimore St. Louis - Indianapolis - San Francisco - Toronto - Montreal - Los Angeles - Denver Wichita - Portland - Worcester - Grand Rapids Jackson - Kansas City - Butte - Buffalo - Niagara Falls - Akron - Cincinnati - Dayton - Toledo - Youngstown - Portland - Pittsburgh Allentown - Washington - Salt Lake City. *Canada:* Minneapolis Honeywell Regulator Co., Limited, Toronto and Montreal. *Export:* New York City. *Cable Address:* "Laboramus."

THE AIRSTAT
For warm air systems

MINNEAPOLIS-HONEYWELL
Control Systems

used is coke or coal. It will be noted from the accompanying illustration that the equipment is mounted on casters and is rolled to the coal storage bin for filling the hopper. It is then rolled in front of the boiler and the front plate takes the place of the fire door. The stoker operation is controlled by the height of the fire bed. A fire brick rests on the bed and falls with the burning of the fuel. At a certain point the mechanism is tripped, the brick is raised, a charge of fuel is rammed from the stoker and the brick is again released to rest on the fresh fuel. Connections are made to the shaking lever so that during the stoking operation, the fire is shaked. This item is manufactured by the Auto-Home Stoker Corporation, 1728 S. Michigan Ave., Chicago.

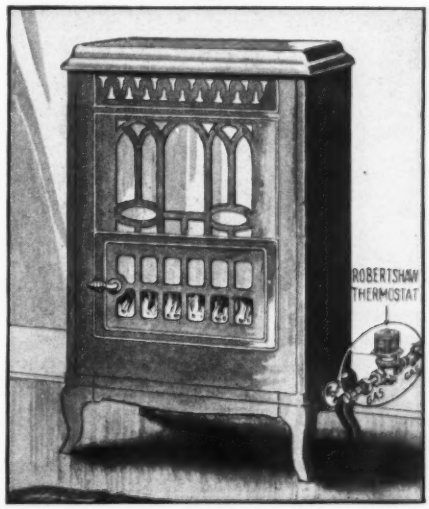
Unit for Washing and Humidifying Air

The unit considered here is now on the market and is for use in individual rooms, offices, and other small installations. It is mounted on legs or casters so as to make it portable. It consists of a motor and blower, a water tank and a set of eliminator plates. Air from the room is drawn in by the blower and forced through the water and the resulting spray. The eliminator plates form a baffle to remove the entrained water. The cabinet is made of solid walnut or metal, finished in walnut, mahogany or other colors to harmonize with the desired decorative scheme. Pure-Aire Corporation, 4753 Madison St., Chicago, is the manufacturer.

Conversion Gas Burner Placed on Market

The gas conversion burner which is illustrated in the accompanying view, is of the blower type. It has a rated consumption of from 30 to 150 cubic feet of gas per hour. The installation is made through the ash pit door and the burner head and baffle plates are put in through the fire door, resting on the grate bars. It is said that the unit can be installed or removed in less than ten minutes. The governor is listed as being the only moving part of the entire mechanism. This regulates the gas supply valve and is located on the lower end of the

ROBERTSHAW
SPACE HEATER
thermostat



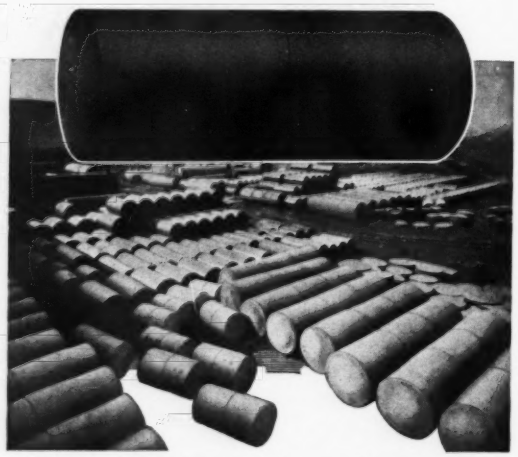
CONTROLLED HEAT

is just as important, for both health and economy, in the space heater as it is in all other gas-fired heating plants. ▲ It is mighty easy to install . . . and it means extra profits on every installation. It is accurate and automatic, small and compact, durable and trouble-proof. You can add it to any space heater, new or already in use. ▲ This Robertshaw Thermostat is furnished with the new non-clog by-pass, which controls the minimum burner or by-pass flame. Be sure you know the extra money this popular thermostat will bring you this season.

WRITE
FOR FREE
FOLDER AND
INSTALLATION FACTS

ROBERTSHAW THERMOSTAT CO.
Youngwood, Penna.

Fuel PDM TANKS Oil
TANKS



Quality oil burner tanks for all types of installations—domestic, factory or bulk storage. Hydro-pneumatic tanks can be furnished in any size to your specifications.

Write today for our New Closed Tank Bulletin.

PITTSBURGH-DES MOINES STEEL COMPANY
3478 Neville Island, Pittsburgh, Pa.—Room 961, 270 Broadway, New York City

SELL
TEEPLE
SPECIALIZED
GAS CONTROLS

Better service to users
Better business for you

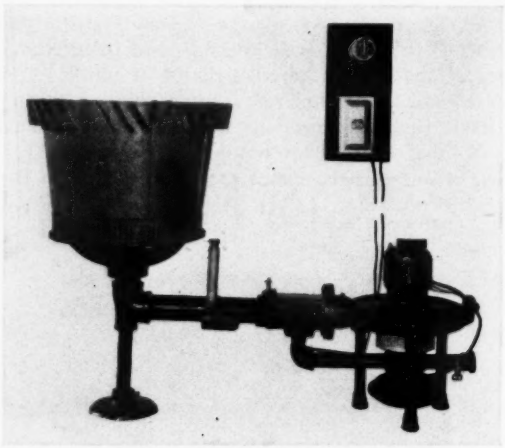
WRITE FOR LITERATURE AND PRICES

L. R. TEEPLE CO.
PORTLAND, OREGON

TEEPLE
SPECIALIZED
GAS CONTROLS

THROUGHOUT THE WORLD TEEPLE SPECIALIZED STOKER CONTROLS OPERATE THE FAMOUS IRON FIREMAN THE MACHINE THAT MADE COAL AN AUTOMATIC FUEL

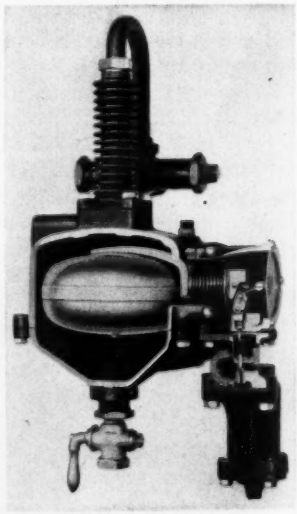
motor shaft. Before the gas supply valve is opened, air is blown through the burner and after the gas valve is closed the motor continues in operation for a few seconds to blow in air through the burner, thus cleaning



all residue and unburned gases. The hood is of special design and is furnished with the burner to regulate the stack draft. The manufacturer of this is The Bialosky Bros. & Company, 6611 Euclid Ave., Cleveland, Ohio.

New Water Feeder is Introduced

This item has been developed and just recently placed on the market for protecting small boilers against breakage as a result of low water conditions. It is for boilers having ratings up to 2,500 sq. ft. Listed as outstanding features are the following: It has a low feed valve temperature for the purpose of eliminating difficulties from precipitation; it is designed to close against any water pressure up to 150 lb. per sq. in. and an emergency switch can be applied quickly for oil burner or stoker jobs. For installing the device, the gauge glass is removed and the feeder is connected to the gauge glass tappings. The gauge glass is installed on the feeder. With this installation and design, it is claimed the feeder will hold the boiler water level up to one inch in the gauge glass. A strainer has been included to give added protection to the feed valve. McDonnell & Miller, Wrigley Building, Chicago, Ill., is the manufacturer.



Let us introduce to you

AIR CONDITIONING FOR COMFORT

This Brand New Book Gives Sales Points—Complete Engineering Data —and a reliable Background for Your Knowledge of Air Conditioning

AIR CONDITIONING FOR COMFORT is brand new—the first complete book to give the "whys, hows and what withs" of engineering for conditioned air. It is written in concise, clear language that ably answers the flood of questions being asked about this big subject.

Its 256 pages are alive with the tables, diagrams and essential data which an engineer or contractor must have to properly estimate or design a job, be it skyscraper or cottage. They set forth the practical formulas for computing all the components of the various heating, cooling and de-humidifying systems.

Samuel R. Lewis, who wrote the book, is a pioneer in the development of the design of plants cooling for comfort, is past president of the American Society of Heating and Ventilating Engineers, and is a consulting engineer with an impressive record of large and small heating and cooling installations to his credit. Out of these achievements have come the exhaustive knowledge and qualifying experience which makes Mr. Lewis such an admirable choice to write this authoritative book on AIR CONDITIONING FOR COMFORT.

You have the opportunity at last of completely informing yourself on the merits of the various air conditioning systems. Send us $2.00 and AIR CONDITIONING FOR COMFORT will be mailed you promptly—with this additional promise—that if you do not want to keep it, you may return it within ten days and we will refund your money.

CONTENTS OF AIR CONDITIONING FOR COMFORT

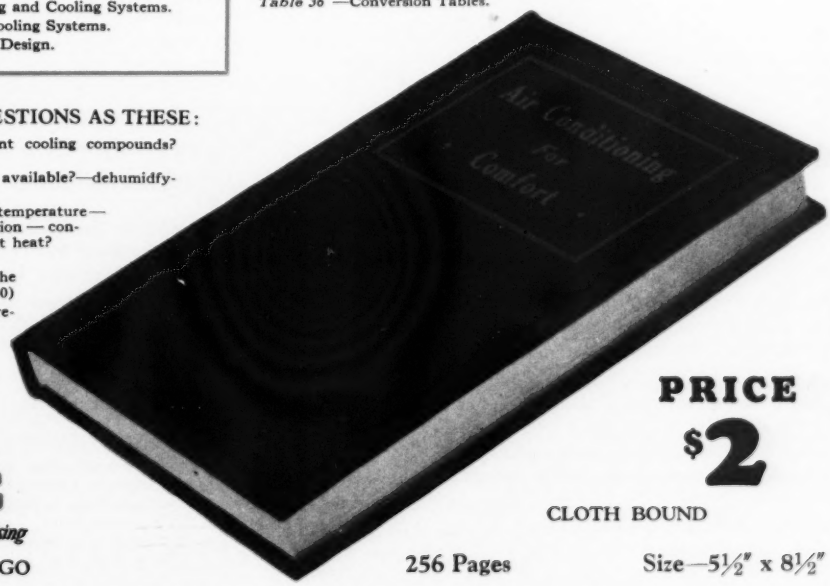
Chapter 1.—Explanation of Terminology.
Chapter 2.—Instruments of Service in Air Conditioning.
Chapter 3.—Relation of the Human Body to Air Conditioning.
Chapter 4.—The Influence of the Type of Heating System Upon Air Conditioning.
Chapter 5.—Heat Transmission Through Building Materials.
Chapter 6.—Calculations for Air Conditioning Requirements.
Chapter 7.—Sunshine, Evaporation, Air Leakage and Lighting.
Chapter 8.—Air Distribution Within Rooms of Cooling Systems.
Chapter 9.—Controlling the Temperature in Air Conditioning Systems.
Chapter 10.—Water Circulation in Heating and Cooling Systems.
Chapter 11.—Air Ducts in Heating and Cooling Systems.
Chapter 12.—Computations for an Actual Design.

36 Tables, 94 Figures, Charts and Diagrams in this New Book, of Which the Following Are Examples:

Figure 4—Capillary type of humidifier.
Figure 11—Diagram of silica gel cycle for removing moisture from air.
Figure 16—Psychometric chart with comfort zone.
Figure 21—Utilization of city water for house cooling.
Figure 25—Coefficients of heat transmission through building materials.
Figure 42—Heat transmitted by evaporation.
Figure 54—Layout of a humidity and temperature control system.
Figure 62—Layout of a simple parallel return heating-cooling plant.
Table 1 —Mixtures of air and saturated water vapor.
Table 36 —Conversion Tables.

ANSWERS SCORES OF SUCH QUESTIONS AS THESE:

—What are the strong points of the different cooling compounds? (See page 26)
—What are the different humidifying devices available?—dehumidfying devices? (See page 8)
—What is relation of the human body to temperature—moisture — motion — chemicals — radiation — convection—evaporation—sensible and latent heat? (See page 42)
—What cooling system will work best with the various heating installations? (See page 60)
—How do you calculate air conditioning requirements? (See chapter 6)
—What is the reasonable temperature and humidity for satisfactory artificial cooling of living quarters? (See table 2)



PRICE $2

CLOTH BOUND

DOMESTIC ENGINEERING
Plumbing & Heating Contracting and Merchandising
1900 PRAIRIE AVENUE CHICAGO

256 Pages Size—5½" x 8½"

The Heating Industry Calls It "Biggest Event of the Year"

What the advent of the ARCO-PETRO *means to the oil-burner dealer*

A series of questions and answers which outline the significance of this sensational development

Q. *Who builds and stands back of this boiler and burner combination?*

A. American Radiator Company and Petroleum Heat and Power Co.

Q. *Has the Arco-Petro advantages which will enable the average dealer to meet and overcome competition?*

A. Decidedly. As to appearance, customers can see with their own eyes that the Arco-Petro is the handsomest heating unit that has ever been made. As to efficiency, there is the testimony of hundreds of enthusiastic users who have cut their fuel consumption from ⅓ to ½; no competitive unit can point to any record of such nation-wide scope. As to weight and size, it is smaller and lighter. As to cost, this complete automatic unit is no more than the price of a comparable boiler plus an oil burner. Moreover, it comes in several sizes to fit small and large homes and operates with either oil or gas. There are other important advantages; write and we shall be glad to go further.

Q. *To what extent will the Arco-Petro be advertised?*

A. Heavily. Full-page copy has already appeared in many newspapers. This is just the beginning.

Q. *What effect will this advertising and the advertising of other similar units have on the sale of conversion burners?*

A. It will greatly stimulate sales of all kinds of automatic heating equipment through bringing home to a greater and greater percentage of the public the manifold advantages of automatic heat.

Q. *Will the Arco-Petro advertising take the place of the advertising of Petro-&-Nokol Burners?*

A. No. That will continue just as it always has.

Q. *What will be the net result of this development to dealers with Petro-&-Nokol franchises?*

A. To those who take advantage of it, substantial increase in sales. First, through the sale of many an Arco-Petro due to their own efforts plus the intensive sales and advertising promotion of the manufacturers. Second, through the sales of conversion burners to many dormant prospects whose interest has been revived by the arrival of the new unit and to new prospects whose interest has been aroused by the new unit but who find it advisable or even necessary for the time being to convert their existing boilers.

Q. *Will the Petro-&-Nokol Public Service Plan be used in selling the Arco-Petro?*

A. Yes. In exactly the same way.

Q. *Are there any territories still open for exclusive Petro-&-Nokol oil burner franchises?*

A. Yes. Yours may be one of them.

Q. *Will the Arco-Petro be sold only through Petro-&-Nokol dealers?*

A. No. It will also be sold by any dealer or contractor in heating equipment.

Q. *To whom should inquiries regarding the Arco-Petro be addressed?*

A. To Petroleum Heat & Power Company, Stamford, Conn.

● Write for details of the Arco-Petro plan—which enables you to offer your customers this boiler-burner unit without your having to equip yourself for its installation or servicing. Regular enfranchised Petro-&-Nokol dealers are ready to handle this part of the work for you . . . where required.

Alert heating men will see in this arrangement a chance for them to cash in on the rapidly growing demand for boiler-burner equipment. Be the first in your community to seize this opportunity.

Control Problems—

(Continued from Page 91)

"Yes, I believe so."

"That gives us 205 sq. ft., then."

"Will such an arrangement prevent drafts from those windows?"

"I believe the 135 sq. ft. of radiation under the windows will prevent drafts from them and the two 35 sq. ft. radiators below will prevent any drafts from the stairway."

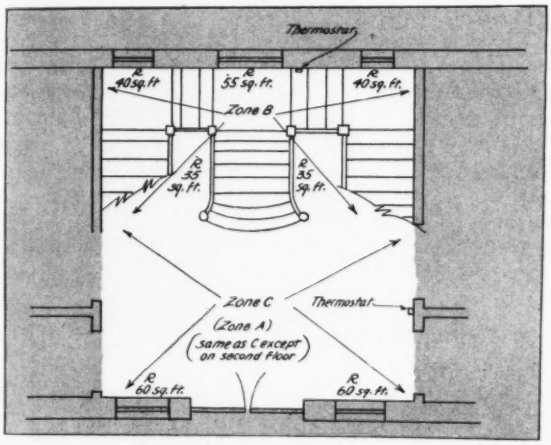


Fig. 5—This plan makes more clear the zoning

"Where shall we install the radiators in the lower hall?"

"Under the windows, if possible. I believe we can install a 60 sq. ft. radiator under each one."

"Yes, easily. I suppose the radiators on the second floor should be under the windows, too.

"How do you suggest controlling these radiators?"

"First of all I'd install a thermostat on the second floor to control the radiator up there. Put it on the inside wall about here," I suggested as I drew in the thermostat shown in Fig. 4.

"What about the lower hall?"

"There should be a thermostat to control the two radiators down there. I believe the best place would be on the side wall." See Fig. 4.

"Now how about the radiators on the stairs?"

"Well, let's see what our problem is. We want to heat the stairway and to prevent the cold air from the windows from causing drafts. Then the logical place is a location which will be about average for the stairway as far as temperatures and cold drafts are concerned. I believe that such a location is to be found under the center window, far enough away from the radiator not to be affected by it." See thermostat location on landing, Fig. 4.

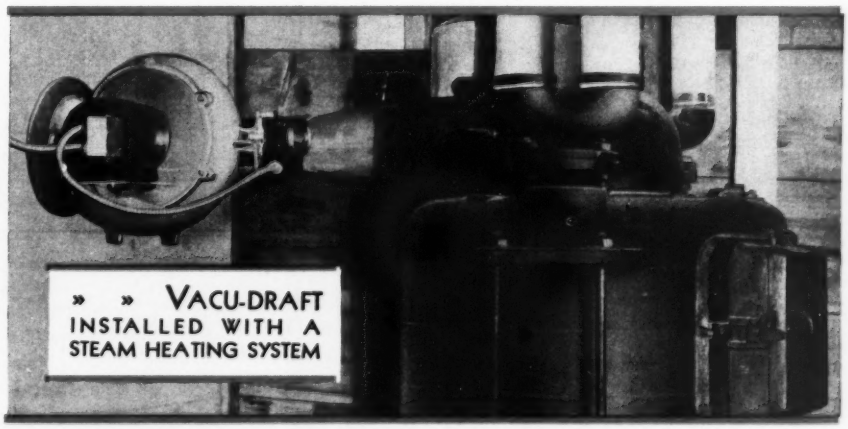
"Wouldn't that thermostat be affected by the heat from the radiators below?"

"No, because the heat from the lower radiators will go straight up and will not come near the thermostat."

"Then we need three thermostats, with one in about the center of each zone." I heard from him later but it was only good news he had to report.

VACU-DRAFT ends *chimney troubles*—

the greatest obstacle in home heating



FAULTY chimneys present greater difficulties in heating than all other problems combined. Insufficient draft caused by chimneys that are too low or on which the draft is interfered with in any way are causing no end of expense and wasted time for the home-owner.

Only when complete combustion is obtained is a heating plant functioning at maximum efficiency. VACU-DRAFT creates a natural draft that absolutely completes the process of combustion, creating the highest possible degree of fuel economy.

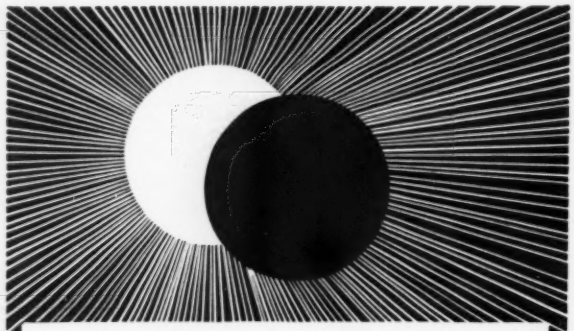
VACU-DRAFT can be installed on heating systems now installed which have not been operating to full capacity, without any alterations or repairs to heating system or chimney.

DEALERS AND DISTRIBUTORS:

Dealers all over the country are enjoying the profits which naturally follow the display of VACU-DRAFT. Write at once for full information and territory open.

VACU-DRAFT CORPORATION, MUNCIE, INDIANA

Division of MUNCIE GEAR COMPANY .. New York Office: 1350 BROADWAY



The thorough preparation for the observation of an eclipse has its parallel in the care exercised in the designing of a high grade electric motor.

Another Important Leland Characteristic

Never will the appliance builder be permitted to lose sight of the precision with which Leland motors are built. Their quiet running qualities are constantly emphasized. Stress is ever being laid on the absence of vibration, particularly in the cradle mounted design so extensively used to drive oil burners, automatic stokers and electric refrigerators.

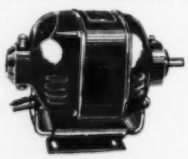
We now call your attention to another characteristic—the Leland cradle mounting. Not only does this type of mounting afford complete flexibility, absorbing all noises of inherent vibration, but it also provides a fixed relation of the shaft. In other words, the shaft cannot be pulled out of line or varied in height.

Securely clamp the motor base to a test bench. Load the shaft with pressure simulating a belt tension or other load thrust. With an amplifying indicator, note how little is the distortion when the pressure is either exerted or removed.

Leland motors will not "let down" with time. They are built for permanency. With this characteristic in mind, compare the Leland with other makes and draw your own conclusions.

The Leland Electric Co.
Dayton, Ohio U. S. A.

Canadian Address: Toronto
Cable Address: "Lelect"



1/8 1/6 1/4 1/3 1/2 3/4 1 1½ 2 3

Leland Motors

Oil-Fired Air Conditioning—

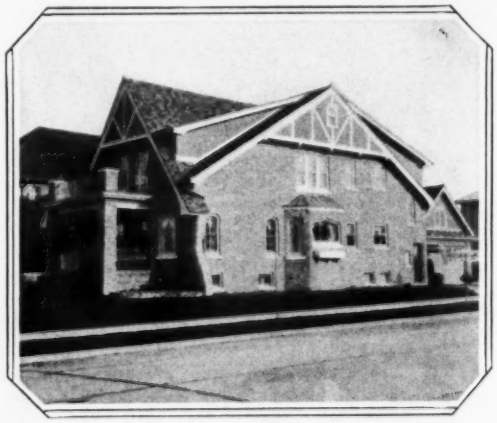
(Continued from Page 85)

continues to operate until all the vapor is out of the heating coil and the hydro switch cuts off fan and air washer.

The return air from the various rooms is drawn into the top of the washer where it passes down through the spray mist, hence through the eliminator plates and to the fan.

The washer has four sprays, spraying 30 gallons of water per hour. This water is at city pressure of 50 pounds and is wasted after the washing operation and passes out at the bottom of the washer to a floor drain.

From the washer the air is drawn to the fan and from here forced into the chamber immediately in back of the heating coil. In this chamber are the ozone machine and the humidity spray. This spray nozzle is about 5 inches back from the coil in the top of the chamber and when



Exterior of the two-flat air conditioned residence

in operation the spray is so fine that it cannot be detected with the eye.

The coil is of the "core" type. Steam from boiler never exceeds a few ounces in pressure and as soon as the system cuts in the boiler pressure goes to negative and about 20 to 25 inches of vacuum is maintained.

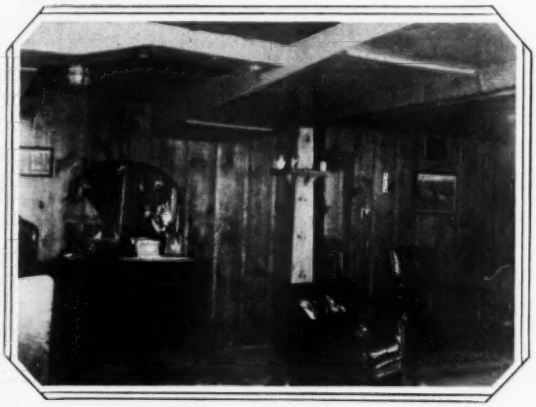
The boiler is equipped with a low water cut out. The hot water supply is heated from the heater connected to the boiler by the 1½ inch manifold as shown on the plans. The thermostatic control of the hot water tank is set at 135 degrees.

A four foot "chamber" of 2-inch pipe is provided on the air washer as shown to prevent vibration from the water passing through the solenoid valve and sprays.

WHAT THE SYSTEM ACCOMPLISHES

The high points in the system may be summed up as: Humidity and humidity control. Temperature and temperature control. Complete air cleaning, eliminating dust and dirt. Circulation of air while the fan is in operation. Economical up-keep for the house is marked, as walls, ceilings, drapes, furniture, etc., show no marks

so common to houses heated by the conventional methods. Economy of fuel is another advantage. This entire two-flat building was air conditioned for $135 for a heating season, and this includes the fuel oil, water for the washer, electricity for the motor, and the heating of the hot water for domestic supply.



The recreation room made possible by a clean, compact installation

More room is required for supply and return ducts but this item is obligatory with air conditoning systems. As this field progresses the architect and engineer must provide the proper ceiling heights in basements to accommodate these ducts.

INSULATION PROMOTES ECONOMY

The importance of insulation and storm sash for economy in fuel is borne out by a comparison of the included plans and the data sheet. The plans show the original requirements before insulation and storm sash were considered. The building loss load on the original data sheet was 148,270. Note that the loss on the included sheet is 90,500 Btu.

The living room on the original data sheet had a loss of 21,000 Btu. per hour. Note that on the accompanying data sheet this loss is 9,000 Btu. or less than one-half. As fuel consumption and heat loss follow a straight line curve approximately, the fuel saving effected by insulation is directly proportional, or 9,000 Btu. for living room to 21,000 Btu. equals 57% saving.

This saving, added to the high efficiency of the system in general, explains the very low fuel cost per heating season.

The original plans called for 2,800 c.f.m. at 120° register temperature at —10 degrees outside. The ducts were designed for this volume of air and the requirement became 2,800 c.f.m. at 100 degree register temperature at —10 degrees outside with the application of insulation and storm sash. As the system works intermittently, 10 minutes on and 30 minutes off, the inlet temperature varies. However, 135 degrees may be called a maximum.

Under actual operating conditions, with the temperature at —6°, the system evenly maintained 41% relative humidity at 70° inside temperature, and thereby avoided any accumulation of moisture on window panes.

Ready for the Market!

THE NEW

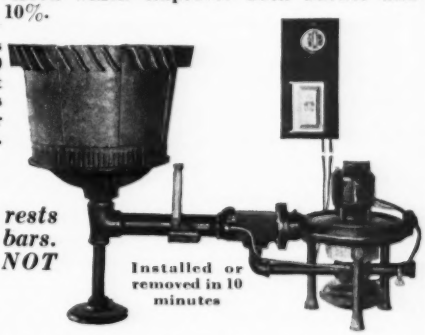
PARAMOUNT

Conversion

GAS BURNER

It is the cheapest, most efficient, durable, simple, fully automatic, positively safe, COMPLETE Conversion Burner offered today. Furnished with a high grade Pilot Light, accurate snap-action Thermostat, a sturdy relay and a patented Draft Hood which improves both burner and furnace at least 10%.

This size takes care of from 50 to 150 cubic feet of Natural Gas per hour. Larger sizes furnished.

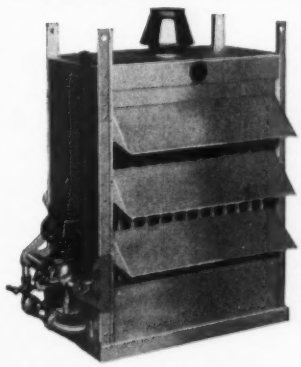


Burner head rests on the grate bars. Grates are NOT removed.

Installed or removed in 10 minutes

For prices and further information write—

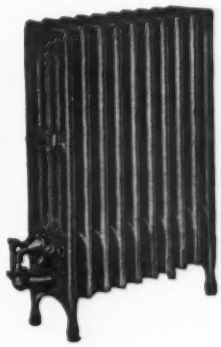
THE BIALOSKY BROS. & COMPANY
6611 EUCLID AVENUE, CLEVELAND, OHIO



***The* PITTSBURGH GAS FIRED UNIT**

Your market is unlimited—industry needs and will react profitably to the Pittsburgh—just go to those with commercial heating problems. Here is a unit heater that works efficiently, being completely automatic; works economically, needing no servicing; clean, compact and it presents you with absolutely no installation problem. They are especially adapted to ventilating, cooling and drying.

AUTOMATIC GAS-STEAM RADIATORS

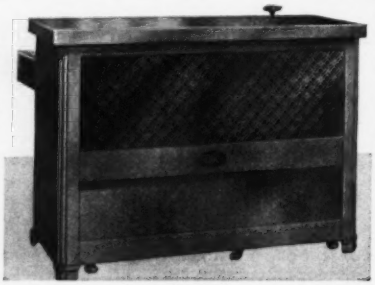


The market today is more alive and open to gas-fired radiators than ever before, because here is an economical answer to heating problems. Can be operated as a separate unit, or in connection with the regular heating plant. Simplicity of installation and operation, together with operation economy making them extremely salable. Write for full details.

Approved by the Testing Laboratory of the American Gas Association

AUTOMATIC GAS-STEAM RADIATOR CO.
BRUSHTON & THOMAS STS. PITTSBURGH

Easy Sales *and* **IMMEDIATE PROFITS** *with the*



THERMOIL *OIL-FIRED* RADIATOR

Generous heat circulated to the far corners at rate of 325 lineal feet per minute. Continuous hot water when desired. Completely self contained. Full automatic operation through high-low thermostat control.

No gas or electricity necessary. No water piping where hot water is not required. Low fuel cost. Burns No. 2 furnace oil. Handsome cabinet—an ornament to any surroundings. Priced to meet today's demand.

Tremendous sales possibilities—small homes; hard to heat rooms in large houses; farm homes; stores and offices; oil stations; restaurants; garages and summer homes.

The Thermoil Radiator Franchise quickly builds substantial profits through easy and frequent sales. Write for full information on Thermoil Franchise while your territory is still available.

THERMOIL HEATERS, INC.
620 Main Street Benton Harbor, Mich.

Continue to get this service!

Thousands of heating contractors have found Automatic Heat filled with the kind of merchandising, technical and financial information that they wanted.

Now this section extends its services to take in Air Conditioning, a combination which is to revolutionize the American conception of comfort in the home and smaller business establishment.

Renew your subscription. Make certain that you will not miss a single issue.

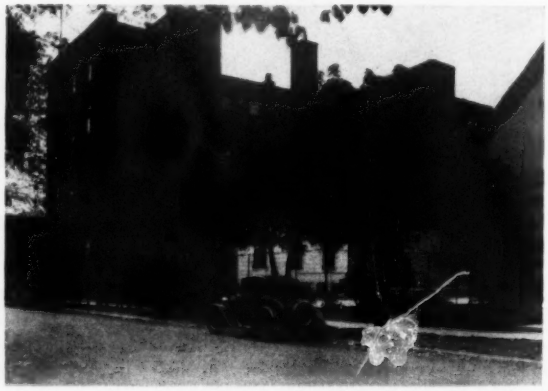
Only Two Dollars a Year—Send in Your Renewal or Your New Subscription Now.

Automatic Heat
and
Air Conditioning Dealer
in
Domestic Engineering
1900 Prairie Avenue Chicago

Hand-Firing vs. Stoker

(Continued from Page 97)

Windows of these buildings are open much of the time for ventilation, and thermostatic control of the stokers was not considered suitable, because of the possibility of the frequent starting and stopping of the machines due to wind striking the thermostats. A control system has been worked out which functions well for the uses of these buildings. It is being installed in the buildings which are fired by these stokers. It is simply an electrical time switch, by means of which the stoker can be operated at any fraction of the twenty-four hours a day, depending upon the outside temperature existing and expected in a few hours, and the efficiency of the plant. All plants have been or will be tested at different temperatures, so that for each one the amount of firing for any temperature is known. For example, one plant may need to fire 25 per cent of the time at a given outside temperature, while another has to fire 30 per cent of the time for the same conditions. Instructions will be sent out from a central office to the janitor attendants at each building, from time to time, giving them the proper time switch setting to use until further instructions are sent. It is planned to use these same time switches for stoker control during the summer when boilers are heating water only. Each boiler has a low water cutoff on the water feeder, so connected as to shut off the stoker if the boiler water drops to a dangerous level.



In order to give an idea as to the size and type of building served by these installations, this photograph is shown

The time switches operate in half-hour cycles, and may be set at any percentage of the cycle from 0 per cent to 60 per cent, or at 100 per cent. In other words, the stoker may be run at any period out of each half hour up to 18 minutes, or the full half hour, which would be continuous operation. There is a pressure switch connected with the time switch in series, and normally set at a high limit of 2 lb. The stoker, with this control connection, cannot operate when the boiler water level is too low, at a pressure above the pressure-switch setting, nor at longer intervals than called for by the time switch setting.

QUICK SALES . . . IMMEDIATE PROFITS

with the Famous MW Line of Oil-Burning Utilities, giving dealers attractive merchandise to sell throughout all seasons of the year

MW

AUTOMATIC • OIL-BURNING

WATER HEATERS

With economy more than ever the buyers' watchword, MW dealers are busy demonstrating and selling the superior convenience, dependability and safety of MW Automatic Water Heaters—marvels of operating economy.

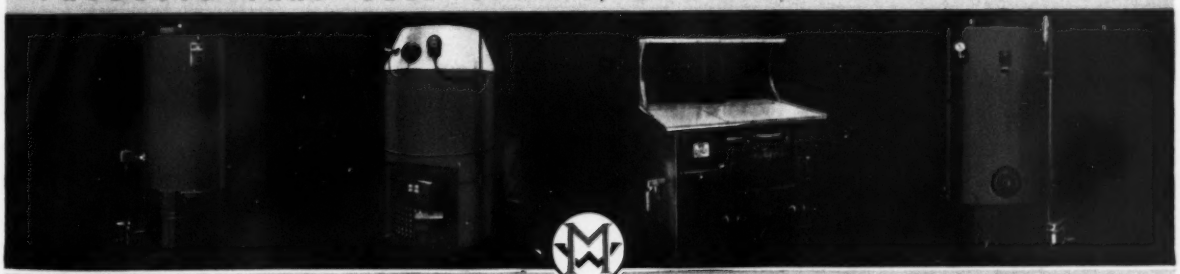
Small and large homes, apartments, offices, schools, hospitals, laundries, factories, garages, public baths, barber shops, stores, beauty parlors and other locations, are logical prospects for MW Water Heaters—which practically pay for themselves, because they cut hot-water costs to one-half of gas and one-seventh of electricity.

Right now, when the approach of cooler weather makes heating and replacement of worn-out heating equipment the live concern of property owners, is the time to secure the franchise for the quick profit opportunities of selling the complete line of MW Oil-Burning Utilities, the line that has no slack season, but assures its dealers of steady, year-round business.

Included in the famous MW line are the famous MW "Automatic Weather Control Units," heating in Winter, cooling in Summer—Automatic Boiler Units for Steam and Hot-Water Heating—Automatic Water Heaters in domestic and commercial capacities—Radiating and Circulating Types Space Heaters—Oil-Burning Cooking Ranges.

Full details of the complete MW line of Oil-Burning Utilities, the liberal franchise terms and the Factory's merchandising cooperation are yours for the asking. Mail the coupon below.

PRODUCTS THAT SELL SPRING, SUMMER, FALL AND WINTER



MW AUTOMATIC WATER HEATERS
Domestic and commercial sizes. For houses, apartments, office buildings, schools, shops, factories. Single and battery installations. Hot water at lowest cost. Listed as Standard by Underwriters' Laboratories.

MW "AUTOMATIC WEATHER CONTROL UNITS"
Round and square types. Warms in Winter, cools in Summer—automatically. Low cost and economical upkeep. Most popular air-conditioning units on the market. Listed as Standard by Underwriters' Laboratories.

MW OIL-BURNING COOKING RANGES
Two types—for homes, restaurants, lunch rooms, roadside stands, hotels, clubs, etc. Quick, clean, uniform, controlled, oil-generated heat—the better, more economical way of cooking, frying, roasting, baking.

MW AUTOMATIC BOILER UNITS
Heating with steam or hot water. Revolutionary burner and tube construction assures most complete heat utilization ever achieved. Small and large capacities.—Listed as Standard by Underwriters' Laboratories.

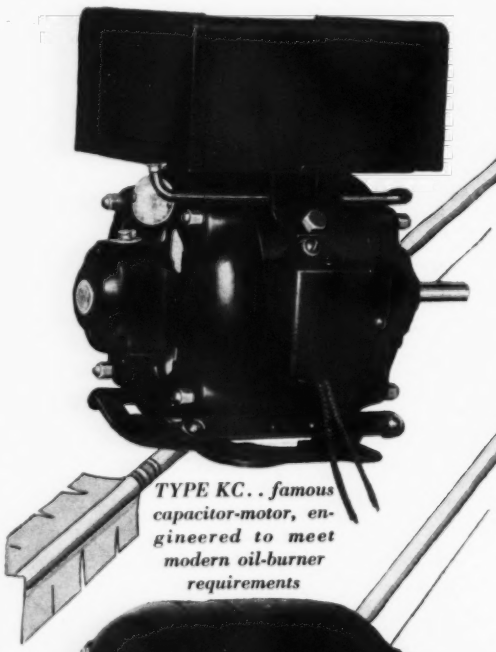
SEND THIS COUPON

MOTOR WHEEL CORPORATION, Heater Division, LANSING, MICH., Dept. B-10

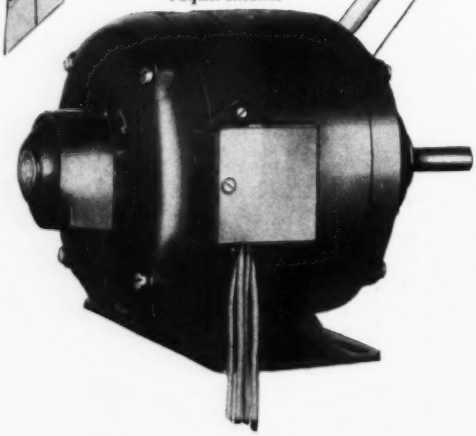
Please send me full information describing the MW line of oil-burning utilities, and explaining its sales and profit opportunities.

Name..... *Address*..... *City*..... *State*.....

TWO GREAT HITS
RIGHT FROM THE START



TYPE KC. . famous capacitor-motor, engineered to meet modern oil-burner requirements



TYPE KH . . . a dependable resistance split-phase drive definitely matched to the characteristics of the modern oil burner

TWO great oil-burner drives have scored from the start . . . the Type KH and the Type KC. They have scored again and again on brilliant performance, dependable operation, and incomparable suitability for the job.

Investigate these proved power units. Compare each with your own conception of a perfect drive. You'll find them simple in construction, unusually quiet in operation, and high in efficiency. And remember, whether you use standard or highly special motors, General Electric application engineers will always be glad to cooperate in solving your drive problems. Investigate also General Electric transformers, cable, etc., for the modern oil burner. There's a G-E office near you; "look into" G-E motors. General Electric Company, Schenectady, N.Y. Sales and engineering service in principal cities.

210-178

GENERAL ELECTRIC

SUPPLY NEWS

FOR MANUFACTURERS, WHOLESALERS, SALESMEN

Central Supply Association to Meet October 26 and 27

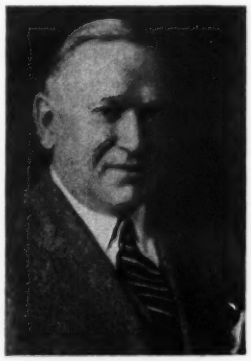
The regular annual meeting of the Central Supply Association will be held at the Palmer House, Chicago, on Wednesday and Thursday, October 26 and 27.

Unite to Market Boiler and Burner Units

The American Radiator Co. and the Petroleum Heat & Power Co. announce a working arrangement between the two companies. Without merging their interests and without any modification of their corporate identities, they will co-operate in offering to the public a joint product. This is a complete automatic home-heating unit, of boiler and burner combined, using either oil or gas. It is designed to provide not only heat but also the household supply of hot water the year round.

W. E. McCollum Appointed Secretary-Treasurer of Central Supply Association

W. E. McCollum is now secretary-treasurer of the Central Supply Association. The resignation of Robert Macfee as secretary-treasurer was tendered to the executive committee on September 14 and accepted. President William J. Spillane appointed a committee composed of H. O. Nelson, William B. Talbott, J. C. McEwen and F. W. Swanson to help select a successor. The appointment was accepted by Mr. McCollum who assumed office on September 15.



W. E. McCollum

In a notice to members, Mr. Spillane says: "I want to express appreciation for the commendable work of Mr. Macfee during his tenure of office and ask for the wholehearted co-operation of the entire membership in making Mr. McCollum's regime successful for all concerned."

Mr. McCollum became secretary of the Central Supply Association in October, 1924, a position he held for six years. He resigned in 1930 and since then has been actively working to establish better credit conditions in the industry.

New Supply House in Columbus, Ohio

Soholmo, Inc., is the name of a new supply business which was recently started at 236 North Third Street, Columbus, Ohio. The new supply house will deal in plumbing, heating and mill supplies, and its officers are: President, Thomas C. Southard; vice president, C. S. Moore; treasurer, M. H. Southard, and secretary and manager, Chas. L. Tisdall.

Has Opened Branch at Hackensack, N. J.

Utility Plumbing Supply Co., of Belleville, N. J., has opened a branch at 289 Railroad avenue, corner of Clay street, Hackensack, N. J.

Schwan Burner Co. Is Organized

The Schwan Burner Company of Dallas, Texas, has been organized and incorporated by Wm. McCormick, A. H. Hall and W. Schwan to take over and continue the business of the Schwan Gas Burner Co., makers of gas burners for automatic heating.

Acme Stoker Corp. Starts in Business

The Acme Stoker Corporation has been incorporated and has started in business at 187 Genesee street, Utica, N. Y., selling stokers. The officers of the new company are: Alan Stevenson, president; Edwin L. Collins, vice president, and Alexander Pirnie, secretary and treasurer.

Oil Burner Manufacturer Re-Employs More Men

In recent weeks, the Williams Oil-O-Matic Heating Corporation, Bloomington, Ill., has been re-employing more working men, 185 being put back to work in a recent three-week period. Night shifts are being maintained in the majority of departments.

Eighty of the company's oil burners were sold during the month of August in a special local campaign. This year's sales are reported as running ahead of last year.

Hammel Radiator Corp. Buys Braasch Furnace Co.

The Hammel Radiator Corporation of Los Angeles, Calif., has purchased the Braasch Furnace Company of that city, and is completing merger of the sales, service and manufacturing facilities of the two concerns. Headquarters will be at the Hammel office, 721 South Figueroa Street. C. H. Pill will be general manager of the merged concerns, and A. J. Braasch will be in charge of production.

Will Manufacture Plumbing Specialties

The G. & M. Faucet Co. of Los Angeles, Calif., has been incorporated with a capital of $100,000, to manufacture plumbing specialties. The incorporators are Basil Gandola, Ernest M. Torchia and E. Torchia.

Will Deal in Oil Burners

The Superior Automatic Heating Co. has been incorporated and has started in business at 919 Wells street, Fort Wayne, Ind., selling oil burners and coal burners. The incorporators are: C. P. Meyer and C. A. Seibel.

Now in New Location

The Sallada Manufacturing Co., Inc., of Minneapolis, Minn., manufacturers of automatic air moisteners, have moved from 720 South Fourth street to 3816 Grand avenue.

Midwest Stoker Association Holds Special Meeting

The Midwest Stoker Association held a special meeting at the Medinah Athletic Club in Chicago on Monday evening, September 26, at which matters of interest to the members of the organizations were discussed. The change recommended in setting heights, which is of vital importance to the industry as a whole, was given much consideration.

Will Manufacture Oil Burners

The International Oil Burner Sales Co., St. Louis, Mo., has been organized by Sidney J. Heiman, 3971 Utah Place, Truman L. Brown, 6208 Wanda Ave. and Samuel I. Berger, 732 Pennsylvania Ave., to manufacture oil burners and oil burning equipment.

Munz Spralawn Corp. Has Moved

Munz Spralawn Corporation of Detroit, Mich., has moved its office and shop from General Motors building to 18706 Woodward avenue.

Distributors and Agents Just Appointed

The H. M. Sheer Co., Quincy, Ill., has just appointed A. J. Pierce, Inc., 206 Vernon St., Norwood, Mass., distributor for most of the New England states. Mr. Pierce is a graduate engineer, with considerable experience in the temperature control field and has also had a number of years' experience in merchandising.

New Representative for Penn Electric Switch Co.

E. W. Carr, Inc., New Orleans, has been appointed manufacturer's representative in Louisiana and the southern half of Mississippi for its line of controls for refrigeration, air compressors, pumps, oil burners, unit heaters and general heating equipment, according to Albert Penn, president of the Penn Electric Switch Co., Des Moines, Iowa.

Manufacturer's Business Gains 58 Per Cent

A statement, just submitted to the management from the heater division of Motor Wheel Corporation, Lansing, Mich., by sales director M. F. Cotes, shows that the business of the division this year up to Aug. 31, exceeds the business done in the corresponding period of 1931 by 58 per cent. One factor contributing to the company's upward sales chart is the mounting public interest in air-conditioning. The company manufactures weather control units, automatic boiler units for steam and hot-water heating, automatic water heaters, cooking ranges, and cabinet heaters—all of them using oil as fuel.

Adds 200 Salesmen in Metropolitan New York

Two hundred new oil burner salesmen have been added to the dealer organizations of the Petroleum Heat & Power Co., Stamford, Conn., in the New York metropolitan area. The men went through a three-day intensive training period at the plant and later were assigned to the various organizations which required the service of more salesmen. The training presented both the technical facts connected with oil burner installation and the technique of salesmanship.

Model Illustrates Principle of Heating Boiler

Models of its boilers in operation are being shown by the Spencer Heater Co., Williamsport, Pa., in many heating dealers' show rooms in connection with the company's sales campaign. The one illustrated is on display in a window of the Architects Samples Company, Park Avenue and 40th Street, New York City, where the company maintains a permanent exhibit of boilers and hot water heaters. This particular display was designed by E. R. Troxell Jr., who has been the New York sales manager of the Spencer Heater Co. since 1913.

The display is planned to illustrate the principle of the magazine feed type boiler and the reason for using sloping grates. A glowing firebed and flickering light indicates rising heat waves. These models are designed and made for easy handling and transportation.

Display Showing Heating Boiler in Operation

Why Plumbing and Heating Supply Jobbers Fail

Officers of the Central Supply Association, recently addressed an inquiry to the secretaries of the various credit bureaus in the association's territory to ascertain the approximate number of business failures among wholesalers of plumbing and heating supplies and obtain information regarding the reasons for such failures. Data was also requested as to the price for which material from the defunct houses was sold to the trade and what percentage on creditors' claims was realized by them.

All the credit secretaries addressed responded promptly. The survey established that approximately 41 wholesalers have become insolvent or gone through bankruptcy during the period under consideration. Seventeen of these 41 were members or subscribers to credit bureaus, 24 were not. Thirteen out of these 17 subscribers were known to have a loose credit policy, and as a rule did not observe their announced credit terms and conditions. Thirty-seven out of the 41 were said not to have observed trade ethics, that is, did not observe the trade practice code promulgated by the Federal Trade Commission.

In cases where information was available, it showed that the material had been sold to the trade by these defunct houses at 25 cents to 50 cents on the dollar. The creditors realized approximately the following on their claims:

5	cents on the dollar	12½	cents on the dollar
7½	cents on the dollar	15	cents on the dollar
10	cents on the dollar	25	cents on the dollar

This tabulation does not include branch houses which have been closed voluntarily; nor does it include two independent wholesalers who have voluntarily liquidated their business without any loss to their creditors.

In commenting on the results of this survey, Messrs. Macfee and Burger state that "the wholesaler in selling on credit to the retailer makes large temporary loans in the form of merchandise. It is estimated that between 90 per cent and 95 per cent of all wholesale business, totaling millions of dollars annually, is credit business. The wholesaler sometimes trades valuable merchandise for a worthless promise to pay.

"The losses from bad debts may be compared to total sales of wholesalers or to total operating expense in the wholesaling establishment. These credit losses may not seem very large when reported as a percentage of sales, that is, they do not appear to add a great deal to the cost price of the commodities sold. On the other hand, they are a heavy item of expense, when viewed as a percentage of operating cost. The individual wholesale house which can reduce its credit losses appreciably has a splendid opportunity to increase its net profits and for this reason the credit department is a very important feature in any wholesale establishment.

"Credit is a convenience, but it may become a convenience for which its users pay heavily. Buying on a liberal credit basis permits some wholesalers or retailers to start in business even though by training and experience they are unfitted for such work. Too much credit may lead to unwise buying even by established firms. A close watch on retailers' accounts is a good method of control of purchases.

Exhibit of Borden Co. at Recent Convention of National Association of Master Plumbers

"Manufacturers are definitely interested in those wholesalers who most adequately control the movement of goods into retail outlets where they can be sold. The work of the credit department therefore is the one thing on which manufacturers should base their choice of wholesalers.

"Successful manufacturers and wholesalers have found that once the price and credit policies of a house are determined as being best they should be adhered to, and they should not be changed without good reason."

Will Represent Milwaukee Valve Co. in Eastern Territory

Milwaukee Valve Co., of Milwaukee, Wis., has appointed R. D. Bitzer Co., of Philadelphia, Pa., as its representative in eastern Pennsylvania, Delaware, Maryland, District of Columbia, and southern New Jersey. R. D. Bitzer is also representing Watts Regulator Co. of Lawrence, Mass., and the Bell & Gossett Co., of Chicago, in the above territories. R. E. Jones is now associated with the Bitzer Co.

Many New Devices to Be Shown at the National Exposition of Power and Mechanical Engineering

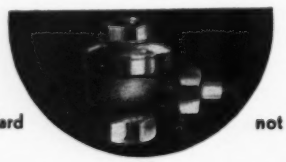
The Tenth National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York, December 5 to 10.

The exhibitors recognize that this year presents some unusual opportunities, and to date 305 firms have signed up. Two years have elapsed since the last big exposition and in the interim many lines have been completely revamped and research has been responsible for many new designs and devices to meet the demands of changed economic conditions. The exposition will offer the first opportunity to show these to engineers collectively and to explain the improvements. The director of the heating and ventilating group at the exposition is H. S. Wheller, 154 West 14th street, New York City.

Sh'h Traps, 89¢

LOOK AT THIS QUOTATION FOR TRAPS, BILL
WHY, THAT WON'T PAY THE COST OF MANUFACTURE
THAT'S THEIR WORRY, NOT OURS -- PUT IN THE ORDER
BUT, JIM -- MATERIAL, WORKMANSHIP, SOMETHING'S CUT -- OH WELL
ONE YEAR LATER..
THE ELEVENTH CALL TO SERVICE THOSE TRAPS -- NOTHING BUT TROUBLE
ALREADY, WE'VE SHOT OUR PROFIT- NOT TO MENTION OUR REPUTATION
YOU'RE RIGHT, BILL -- NEVER AGAIN. FROM NOW ON WE INSTALL ONLY B&J EQUIPMENT -- IT'S BUILT TO GO ON THE JOB AND STAY THERE

If price alone counted we could sell traps for 89c and make money. But not a trap like the one shown below. That has a phosphor bronze thermostat, bronze casting, plus materials and workmanship to give performance. It's a B & J trap and is made to go on the job and stay there. That's REAL ECONOMY—think it over.



Built to a standard not a price » »

BARNES & JONES INC.

You should have this bulletin in your files

127 Brookside Avenue, Boston Mass.

Send without obligation your book describing Barnes & Jones Vapor and Vacuum Systems of Heating.

Name.....

Company.....

Street.....

City.....State.....

588

Death of W. G. Shafer

W. G. Shafer, president of W. G. Shafer Co., Inc., wholesale dealers in plumbing and heating supplies in Syracuse, N. Y., died suddenly of heart failure last month, as mentioned briefly in the September number of DOMESTIC ENGINEERING. He had been in apparently good health and died at the wheel of his car on his way home from the office. He was in his 52nd year, having been born May 15, 1881, in Syracuse. He began his

W. G. Shafer

business career in 1898 as billing clerk for Pierce, Butler & Pierce Mfg. Co., became manager in 1914, and started in business on his own account in May, 1922. He was a director and vice president of Eastern Supply Association at the time of his death. He had a large circle of friends among the manufacturers and wholesalers as well as among plumbing and heating contractors. A great number of them attended his funeral.

Joseph F. Grosswiller

Joseph F. Grosswiller, founder and for many years president of the plumbing and heating supply house of Jos. F. Grosswiller Company in Toledo, Ohio, died in his home in that city on Sunday, October 2, in his 71st year. Had Mr. Grosswiller lived one day longer, he could have celebrated his 71st birthday anniversary. He retired from business as head of the company which bore his name about a year ago, and which is now known as the Huron Plumbing Supply Co. He had been connected with the plumbing supply business 52 years, most of the time as president of his own company. He was a member of the Masonic fraternity and of the Presbyterian church. His widow survives him.

Henry E. Colvin

Henry E. Colvin, credit manager and cashier of the Pierce, Butler & Pierce Mfg. Corp. at Oswego, N. Y., died September 16 at the Oswego Hospital in his 56th year after a short illness of pneumonia. Mr. Colvin was born in New Haven, N. Y., and was for many years a member of the Oswego Yacht Club, serving as its commodore.

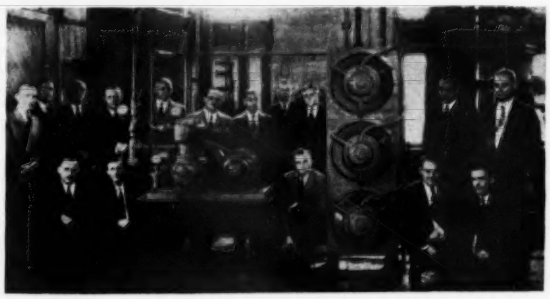
York Ice Machinery Corporation Holds Regional Managers' Meeting

The annual regional managers meeting of the York Ice Machinery Corporation was held September 20, 21 and 22 at the main office of the company in York, Pa.

This yearly meeting of the York Corporation executives is held immediately preceding the beginning of the firm's fiscal year to discuss plans for promoting the company's activities during the ensuing period.

The program for this year's meeting included discussions on new developments in air conditioning, dairy, commercial, accessory and supply equipment, an inspection trip through the company's manufacturing departments and research laboratories, and a demonstration of the company's new refrigerant.

W. S. Shipley, president of the York Ice Machinery Corporation, in his introductory remarks at the initial



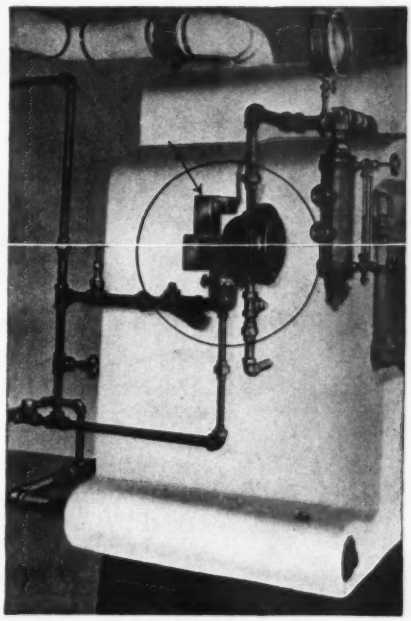
Regional managers at York meeting

session of the meeting, pointed out to his associates the economies effected in manufacturing costs during the past year and outlined plans for marketing the company's products during the next fiscal period. Mr. Shipley further stated, that in his opinion, the forthcoming year would be productive of increased sales for the company, due to the new developments which were about to be placed on the market and the upward trend of business in general.

A lengthy discussion on the marketing plans of the company for the next fiscal year on the last day concluded the program. The sales promotion and advertising activities outlined will include publicity, direct by mail campaigns, trade paper advertising and sales literature. W. S. Stair, advertising manager, and J. L. Rosenmiller, sales promotion manager, collaborated in leading this discussion.

Village of Kohler Wins First Prize

First prize in the national better homes contest for localities of under 10,000 population, has been won this year by Kohler, Wisc. This is the home town of a group of industrial workers and of the Kohler Co. factories and general offices. This village has won seven prizes in these nation-wide contests. A special feature of its record this year was the building and opening of the community's eighth demonstration home, a colonial cottage. Miss Marie C. Kohler, sister of Walter J. and Herbert Kohler, heads of the Kohler Co., is chairman of the Kohler Better Homes committee.



The Webster Boiler Protector Installed with Water-Feed Operating Level 1" Above Bottom of Gauge Glass.

FOR OIL, GAS and STOKER-FIRED BOILERS

Protection, not merely automatic water-feeding, is the primary purpose of the Webster Boiler Protector . . . *To protect* low pressure heating boilers against damage resulting from accidental low water.

An important protection feature is the location of the Webster Boiler Protector on the danger line—*with the Protector Operating Level 1" above the bottom of the gauge glass.*

Until the advent of this unique safety device, "feeders" were located on the water line. Every surge in water level resulted in "feeding" and eventual flooding which, in turn, meant another device to take care of overflow.

Only in the Webster Boiler Protector do you get these triple protection features: (1) Danger-line location (infrequent operation, freedom from flooding); (2) Powerful hydraulic operation; and (3) Instantly developed maximum capacity.

Write today for complete description and installation details.

Now, for oil, gas and stoker-fired installations, the Webster Boiler Protector may be obtained with *integral low-water cut-out switch.*

WARREN WEBSTER & CO., Camden, N. J.
Pioneers of the Vacuum System of Steam Heating
Branches in 60 principal U. S. Cities—Darling Bros., Ltd., Montreal, Canada

a P 17

The Webster Boiler Protector

Check your Supply of
TRIMO TOOLS

Your dealer is in readiness to replenish your working equipment with new, tested TRIMO Tools

The makers of TRIMO Tools have now completed a country-wide check-up of TRIMO dealers to assure you of prompt, satisfactory service on all TRIMO Tools and replacement parts.

Now is the time to put your tool equipment on an efficient, profitable basis. Work can be speeded up to show a better margin for you when you use modern all-steel TRIMO wrenches, TRIMO pipe cutters, and the sensational TRICROME wheels.

Check your supply and place an order with your dealer. He is extending you a real service by keeping in readiness to fill your needs.

•

TRIMO TOOLS

•

Known as the best for fifty years

TRIMONT MFG. COMPANY
Roxbury (Boston), Mass.

BUSINESS PERSONALS

Walter J. Kohler

WALTER J. KOHLER, for 27 years president of the Kohler Co., manufacturer of plumbing fixtures, heating equipment and electric plants, was selected as the Republican nominee for governor of Wisconsin—an office he held in 1929 and 1930—at the primary election on Sept. 20. Out of an intensive campaign which yielded a record vote, former Governor Kohler emerged a winner by a majority of more than 90,000 votes over Gov. Philip F. La Follette, who two years ago had eliminated the manufacturer from renomination by nearly 128,000 votes. In response to a demonstration on primary night, Mr. Kohler spoke briefly. "The best way to give employment is to energize industry," he asserted during his remarks. "As a result of industrial activity, not only the men who work directly for these concerns, but also business men, farmers, bankers and others who depend on the workmen for their markets, will profit."

JERE SHEEHAN, JR., of St. Louis, Mo., past president of the National Association of Master Plumbers, served as foreman of the Grand Jury in the St. Louis court during the September term.

W. H. SCOTT has been appointed general sales manager of The Duriron Company, Inc., Dayton, Ohio, succeeding T. D. Slingman, Jr., who has resigned. Mr. Scott has been with The Duriron Company for thirteen years, having been in charge of the Atlanta division and later the Philadelphia territory. In 1929 he became sales manager of the company's industrial department and head of its technical department.

R. C. COSGROVE, manager of the refrigeration division of the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., has been placed in charge of the company's domestic air conditioning activities in addition to his present duties. Mr. Cosgrove has been connected with the Westinghouse company for 13 years, joining it in 1919.

C. R. KNIGHT, who has been connected with Russell D. Knight Co. of Philadelphia for the last four years, has opened office as manufacturer's agent at 246 South Main Avenue, Albany, N. Y. At the present time he is covering the state of New York for Dick Bros., Inc., of Reading, Pa., and L. B. Ladoux of New York City.

G. P. BLACKISTON has been appointed sales promotion manager for Davis Engineering Corporation of New York City, manufacturers of hot water heaters.

G. E. TENNEY has been appointed sales manager of the Chicago district for the Lincoln Electric Co. of Cleveland, Ohio, whose Chicago office is located at 1455 West 37th street. Mr. Tenney is a graduate engineer from Ohio State University and has had many years'

experience in engineering and sales work. Before coming to the Lincoln Electric Co. he was for nine years with the Moore Drop Forging Co. at Springfield, Mass., the last three years as sales manager.

D. M. ARCHER has been appointed representative of the Sarco Co. for the New England states with offices at 11 Wolf Street, W. Roxbury, Boston, Mass. Mr. Archer has been doing sales engineering work at the New York office of the Sarco Co. for the past three years. He will handle the company's line of steam specialties.

W. C. GOODWIN, manager of renewal parts engineering department of the Westinghouse Electric and Manufacturing Co. of East Pittsburgh, Pa., has just been appointed division engineer of this company's air conditioning equipment division. Mr. Goodwin has been connected with this concern since 1915.

FRED W. CARLSON has been appointed representative in Seattle, Wash., and vicinity, for the Davis Engineering Corporation of New York, N. Y., and Elizabeth, N. J. He will make his headquarters at 959 Harrison street, Seattle, Wash.

St. Louis Chapter's October Meeting

The St. Louis Chapter of the American Society of Heating and Ventilating Engineers, held its regular monthly meeting at the American Hotel in St. Louis, Mo., Wednesday, October 5, following a noon luncheon. The meeting was called to order by President Foster and a discussion was held on the joint meeting at the University of Illinois scheduled for October 15, between the Kansas City, Illinois, Wisconsin and St. Louis chapters.

President Foster then announced that the chair would receive nominations for the nominating committee. A motion was made by George Myers and seconded by L. Walter Moon, nominating J. W. Cooper. A motion was then made by Mr. Cooper and seconded by George Myers, nominating L. Walter Moon. This was followed by a motion by L. Walter Moon, seconded by Paul Sodemann, nominating E. A. White.

L. Walter Moon, J. W. Cooper and E. A. White, were thereupon unanimously nominated for the local nominating committee, after which the chair appointed George Myers and G. A. Helwig as members of the nominating committee with instructions to present their slate to the secretary at least 30 days before the November meeting.

Theodore Koven Buried in Jersey City

Theodore Koven, president of L. O. Koven & Bro., Inc., of Jersey City, N. J., who lost his life on Mt. McKinley, Alaska, May 15, while studying cosmic rays, was buried at Jersey City in September.

Henry Kenning

Henry Kenning, sales representative for W. A. Case & Son Mfg. Co. of Buffalo, N. Y., lost his life in an automobile accident near Erie, Pa., on September 16, in his 65th year. Mr. Kenning had been associated with the Case Company for many years. He is survived by his widow, three sons and two daughters.

WESTCO JUNIOR
No. 25
250 to 350 g.p.h.
$80 f.o.b. Factory
Slightly Higher on Pacific Coast

WESTCO JUNIOR
Turbine-type
WATER SYSTEM
100% Automatic
and Self-priming

DEALERS! *this amazing value is a real* MONEY MAKER

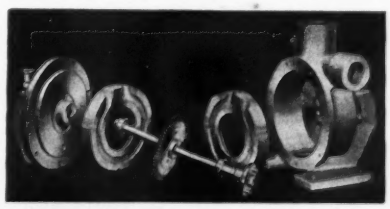
New, patented selling feature.
Full dealer discounts allowed.

HEADING the list of Westco selling features are its PATENTED **REMOVABLE LINERS.** These **LINERS** permit the capacity to be increased or decreased without disturbing the installation. This new, exclusive feature has another valuable advantage because, in the **LINERS** you have the essential elements which accomplish the pumping. For this reason, the pump casings cannot wear out and they should last a life time. Westco dealers find this feature to be a powerful sales aid. If foreign matter should accidentally enter the pump chamber and cause wear, the pump can easily be made as good as new. Simply replace the **REMOVABLE LINERS.** This job costs but little and can be quickly done on the owner's premises.

Westco Juniors come in two models. The only difference being in their capacities. Model 25 has a full 250 to 350 g.p.h. capacity. Model 32 has a larger capacity ranging from 325 to 450 g.p.h. Westco Water Systems are also built in larger sizes with capacities ranging upward to 3000 g.p.h. All Westcos have Automatic Air Volume Control and are self-priming, quiet in operation. Only one moving part—the Impeller. *NO* metal-to-metal contact inside the pump, *NO* gears, *NO* rods, *NO* valves, *NO* pistons, *NO* springs, *NO* leathers. In fact, nothing to get out of order.

These up-to-date water systems require lubrication only once a year. They are absolutely free from the usual water hammer and pounding in the pipes. Good for 28 ft. suction lift. Attractively finished in apple green and jet black enamel.

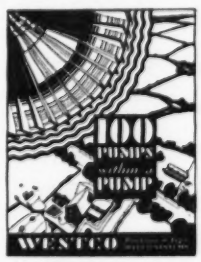
Why not be the leading pump and water system dealer in your locality? It's easy when you handle the complete line of Westco Water Systems, Condensation and Receiver Units and Commercial Pumps whose capacities range up to 400 g.p.m. Westco's **MONEY-BACK GUARANTEE** and advanced mechanical Features are proven sales getters. Remember, Westco franchises are exclusive franchises. So act quick!



Disassembled view showing Westco's patented Removable Liners, Impeller and Casings

Fill in the coupon below. *Mail it today* for FREE, colorful Catalog and new, low Price List which are just off the press.

Westco Pump Corporation, Davenport, Iowa. *Branches:* New York, Philadelphia, Chicago and San Francisco. *Jobbers in 50 Principal Cities.*



COUPON *BRINGS* CATALOG

WESTCO PUMP CORPORATION
Davenport, Iowa, Dept. D-10

Gentlemen: Without obligation please send me FREE Westco Water System Catalog and Price List.

Name.....
Address.....
City.....
State.....

WESTCO *TURBINE* PUMPS

With the Trade Golfers

Milwaukee Wins from Chicago in Inter-City Match

Master plumbers of Chicago and Milwaukee held their annual inter-city tournament on Setpember 29, near Burlington, Wis. The meeting was held on the invitation of the Milwaukee Plumbing and Heating League which had placed a handsome cup in competition between the two cities. As a result of the play, the Milwaukee golfers retained possession of the cup by a net score of 1,944 to 1,941.

The match play as well as the social feature were in charge of President Louis R. Schmaus of the Milwaukee League, assisted by Henry Swade, president of the Plumbing Contractors Association of Chicago and Charles Dreier, Chicago's golf chairman.

The meeting attracted about 60 master plumbers and their guests. Among the Milwaukee visitors who did not play were the following: Lewis Friend, Jacob Schuh, Joseph Brah, Otto Waskow, Joseph Wittig, Peter King, Andrew Maag and Ed. Niedecken. Illinois visitors included William Redieske, Henry Strenger, J. D. McGrath, Harold Griffith, as well as Mrs. Clarence Bolton and Mrs. Henry P. Reger.

Scores for match players were:

Chicago	G.	H.	N.	Milwaukee	G.	H.	N.
Reger, H. P.	103	24	79	Boettcher, A. F.	103	21	82
Bolton, C.	86	22	64	Buchholtz, H.	103	24	79
Wagner, E. C.	100	26	74	Schmaus, Louis	116	23	93
Russell, Perry	106	23	83	Cordes, F.	98	20	78
Ludwig, Walter	114	20	94	Wilson, George	94	15	79
Arnold, W. P.	104	21	83	Glass, F.	92	16	76
Swade, Henry	104	28	76	Van Eweyck, G. W.	114	25	89
Diedesch, Henry	122	29	93	Stoehr, Geo.	89	18	71
Lasley, I. C.	107	26	81	Tambert, J. W.	105	25	80
Weber, R. J.	104	25	79	Footin, Nils	95	25	70
Glen, W. K.	87	8	79	Sommers, M. W.	94	11	83
Jones, C. W.	96	15	81	Guenther, C. R.	90	11	79
Sawhill, Ray	94	21	73	Baker, C. W.	107	30	77
Blair, John	110	28	82	Schlefsky, H. E.	94	19	75
Knauss, Wm. F.	108	24	84	Bowers, A. T.	124	42	82
Weis, Geo.	100	19	81	Enslow, C. A.	95	13	82
Hackett, F. K.	101	18	83	Greeble, J.	104	22	82
Neal, Dr.	95	20	75	Nichols, H. P.	92	16	76
Dreier, C. A.	106	25	81	Hoffmann, A. A.	127	34	93
Munn, Peter	110	22	88	Prendergast, M. M.	97	17	80
Brookman, Wm.	108	30	78	Pflugradt, A. J.	92	19	73
Pullum, C.	114	30	84	Steele, H.	125	38	87
Strenger, Ed.	109	25	84	Ryan, Jerre	124	42	82
Nelson, B. W.	100	25	75	Stickler, B.	104	21	83
	2498		1944		2478		1941

N. E. Metal Products Golfers' September Meet

The New England Metal Products Golf Association held its September meet at the Wannamoisett Country Club, Providence, R. I., on Thursday, September 15th. A fine chicken dinner was served, after which President R. B. Lane introduced the following guests: Stanley Cady of General Fittings Company; Charles Stewart of Hoffman Specialty Company; John Milliken, Harry Taylor, Frank Johnson, John Bassett, A. Hober, Charles McHugh and H. Howard.

It was voted to hold the October meet at Manchester Country Club, Manchester, N. H., upon the invitation of William Hayes. It was also voted to extend thanks to George Phillips for his kind invitation to come to Wannamoisett and for making this meeting a success.

Among the prize winners were the following: R. T. Lane, gross 79, net 70; Leon Graves, gross 87, net 72; John G. Ross, gross 89, net 74; T. H. Dawson, gross 105, net 75.

Among the cards turned in were the following:

	G.	H.	N.		G.	H.	N.
T. H. Dawson	105	30	75	A. Papineau	96	14	82
Geo. Phillips	111	25	86	Geo. Elliott	103	19	84
R. B. Lane	79	9	70	W. Weiss	112	30	82
J. S. Nicholl	94	17	77	H. Murdock	111	21	90
Wm. Hayes	87	9	78	Geo. Tillinghast	125	30	95
R. McKeown	87	15	72	M. Chamberlain	114	30	84
L. Graves	87	15	72	Wm. Bennett	117	26	91
T. Swan	110	15	95	M. Lynch	99	17	82
J. Ross	89	15	74	S. Kindelin	127	30	97

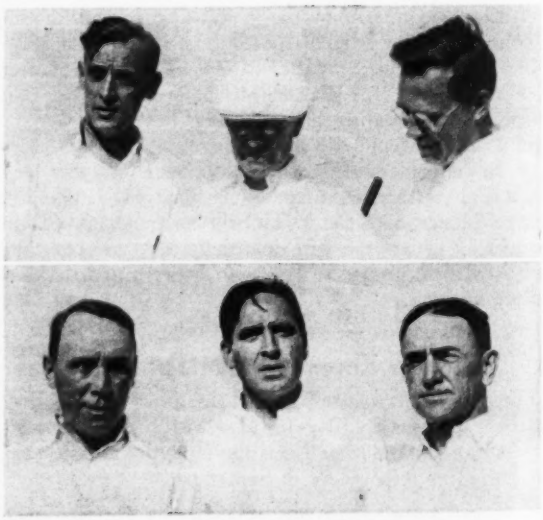
Delaware Valley Trade Golfers End Season at Concord Country Club

The Delaware Valley Trade Golf Association held its final tournament of the year on the links of the Concord Country Club at Concordville, Pa., on Tuesday, September 13, with a large attendance. The Speakman Co. of Wilmington, Del., was host of the day and made the event a most enjoyable one.

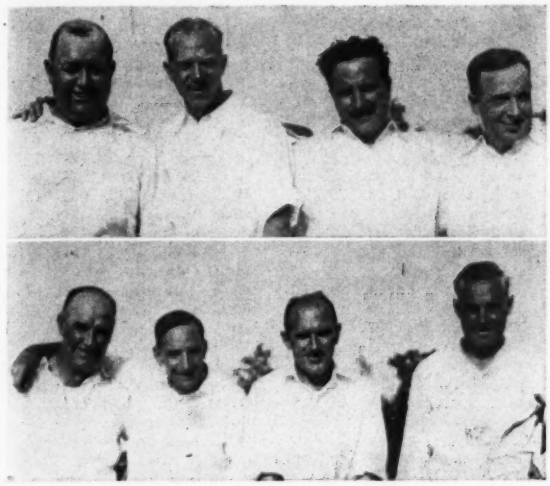
The day's play called for 9 holes in the morning round and 18 holes medal play in the afternoon, and some exceptionally low scores were turned in for this well trapped rolling course. A. V. Gemmill of Speakman Co., playing his home course, posted a dandy gross of 78 and net of 66, while J. W. Worthington came in with a gross 93, and with a 35 handicap walked off with first prize with a net 58.

Other prizes for the morning were won, in order, by the following: R. D. Knight, R. F. Kleinman, Robert G. Savill, H. J. Carr, S. J. Radice, Chas. P. Hackett and H. J. Kleinman.

The afternoon prize winners, in order, were: Charles



Top row, left to right: Phil Faherty, vice president, Pierce, Butler & Pierce Mfg. Corp., New York City; Harry Speakman, Speakman Co., Wilmington, Dela., and Geo. E. Hoffman, Crane Co., Chicago. Bottom row: James Fraser and W. A. Speakman, Jr., of Speakman Co., and W. T. Inderlied, all of Wilmington. At the Delaware Valley Trade golf meet



Top row, left to right: Walter Muench; James Dwyer, manager Crane Co., Philadelphia branch; George H. Lang, manufacturers' agent; Frank Riddell, assistant chief engineer, Pennsylvania Railroad, all of Philadelphia. Bottom row: F. H. Elliott, Wilmington; Albert V. Gemmill, advertising manager, Speakman Co., Wilmington; A. B. Campbell, Frenchtown Porcelain Co., N. J. and R. L. Ottke, Standard Sanitary Mfg. Co., Pittsburgh. Taken at Delaware Valley golf meet

E. Snodgrass, Frank G. Newton, H. H. Held, John Bitzer, C. V. Haynes, R. W. Cummings and J. Fraser.

Three special guest prizes were won by: J. Fletcher Wright, S. R. Duncan and Jack Speakman.

A brief meeting conducted by President C. P. Hackett was held after the dinner in the evening, and Willard A. Speakman, president of Speakman Co., A. V. Gemmill and James Fraser also of Speakman Co. spoke briefly. Mr. Speakman's remarks stressed the opportunity a gathering of this nature gives for meeting old friends and the pleasure he took in greeting every one there. A vote of thanks was extended to the Speakman Co. for its hospitality to the members. The arrangements for the meet were given over to James Fraser, A. V. Gemmill, Harry Speakman and J. Fletcher Wright, who also came in for their share of credit in making it a memorable day.

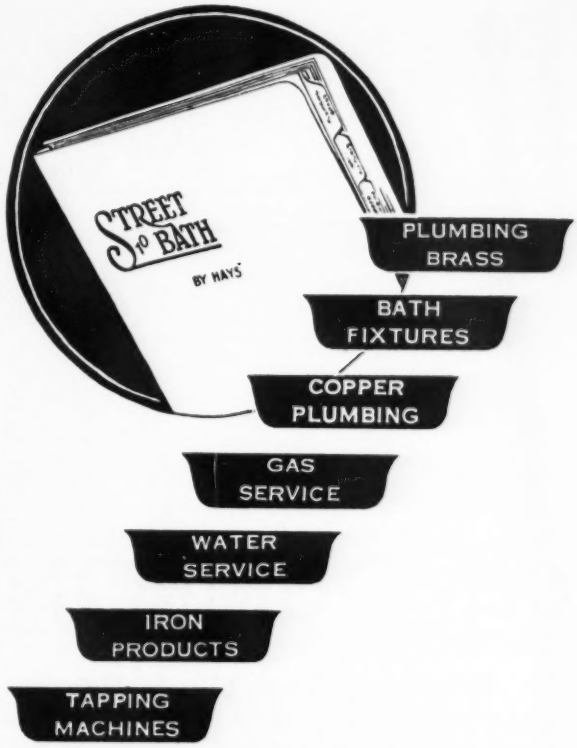
Captain Wilson G. Tyler thereupon awarded the prizes.

Morning Round

	G.	H.	N.		G.	H.	N.
G. Sauter (Guest)	47	..	..	S. J. Radice.....	50	12	38
R. F. Kleinman..	44	10	34	B. C. Reuter (G.)	63	..	..
H. J. Kleinman..	49	10	39	J. F. Wright (G.)	43	..	..
A. Scharnagl (G.)	42	..	..	A. B. Campbell (Guest)	50	..	..
G. Duncan (G.)..	55	..	..	R. Ottke (G.)....	43	..	..
J. Fraser	49	10	39	F. H. Elliott (G.)	44	..	..
J. Bitzer	57	16	41	A. V. Gemmill...	39	6	33
R. D. Knight....	48	15	33	J. Speakman (G.)	43	..	..
H. P. Croney (G.)	54	..	..	J. W. Worthington	51	17	34
F. Newton	57	17	40	H. J. Carr.....	47	10	37
R. C. Bamberger (Guest)	54	..	..	S. Pfluger (G.)...	46	..	..
C. V. Haynes.....	50	13	37	W. G. Tyler.....	58	13	45
C. P. Hackett....	54	16	38	R. Savill	46	11	35
A. A. Tomlinson..	51	12	39				

Afternoon Round—18 Holes Medal Play

	G.	H.	N.		G.	H.	N.
W. L. Ridgeway (Guest) 112		..	..	W. T. Inderlied (Guest)	89	..	..
J. E. Stiegler (G.).117		..	..	A. N. Kuschan (Guest)	96	..	..
H. P. Croney (G.).115		..	..				



7 BIG SERVICES .....by HAYS

Here's a book that should be at your finger tips when you buy plumbing goods. It gives you a wide range of selections in equipment, styles and sizes but just one quality standard—GOOD.

Tabbed, indexed and coded for your convenience, you can select with confidence and order (from your wholesaler) from the catalog "Street to Bath," getting prompt deliveries. With shelves so bare, here's a chance to win jobs that otherwise might be lost.

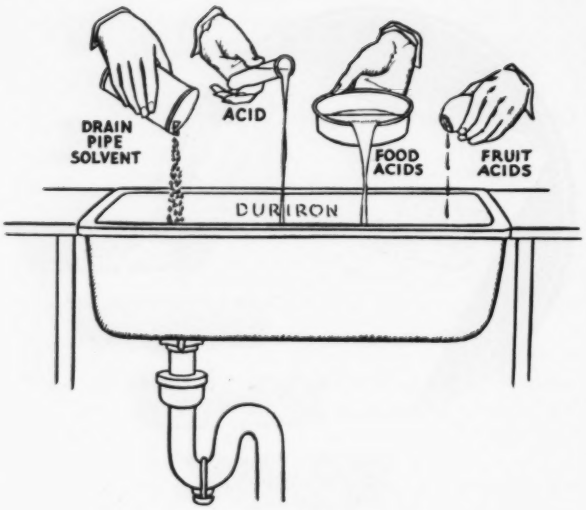
Remember too, that when you buy any of these 7 big services, you must be satisfied. That is our guarantee to your local wholesaler. Send for a copy of this book today and you'll find that our 63 years in your service can be mighty profitable to you.

HAYS MFG. CO., ERIE, PA.

MANUFACTURER TO WHOLESALER TO MASTER PLUMBER

HAYS

COPPER BRASS AND IRON PRODUCTS



Only DURIRON *will do for this*

Imagine the effect of laboratory acids, food and fruit acids, battery acids, photostat developing solutions and drain pipe solvents on ordinary pipe! In just a little while such pipe is pitted and eaten away.

A good workmanlike job demands Duriron wherever acids are apt to be used. It should be used also for soda fountain drainage, because of the carbonated water, which contains carbonic acid.

Duriron is cheaper for your customer in the long run and you make more profit on the installation. It pays you and your customer to install Duriron. No delay . . . shipments made quickly from complete stocks. Write for Bulletins.

THE DURIRON COMPANY, INC.
410 N. Findlay St. ◆ Dayton, Ohio

DURIRON ACID PROOF DRAIN-PIPE

R. C. Bamberger (Guest) 119	..	..	
F. Riddell (G.)...115	..	..	
W. W. Muench (Guest) 92	..	..	
J. A. Dwyer.....110	29	81	
G. H. Lang.....105	26	79	
R. Ottke (G.).... 89	..	..	
A. B. Campbell (Guest) 93	..	..	
F. H. Elliott (G.) 91	..	..	
A. V. Gemmill.... 78	12	66	
R. W. Cummings 94	20	74	
R. W. Willis (G.) 99	..	..	
Wm. Robelen (Guest) 114	..	..	
H. J. Kleinman..100	20	80	
F. Newton 103	35	68	
A. B. Seither (G.) 93	..	..	
J. Speakman (G.) 93	..	..	
J. W. Worthington 93	35	58	
W. A. Speakman, Jr. (Guest) 94	..	..	
J. Fraser 97	20	77	
C. V. Haynes.... 98	27	71	
C. P. Hackett....104	33	71	
A. A. Tomlinson 109	25	84	
H. H. Held.....103	35	68	
C. E. Snodgrass.. 88	20	68	
A. Scharnagl (G.) 98	..	..	
G. R. Duncan (G.) 96	..	..	
J. F. Wright (G.) 87	..	..	
C. Owen 108	27	81	
B. C. Reuter (G.).112	..	..	
Wm. Hanson 103	22	81	
S. J. Radice..... 99	25	74	
G. T. Sauter (G.). 92	..	..	
J. Bitzer 101	32	69	
R. D. Knight....108	30	78	
R. F. Kleinman.. 90	20	70	
S. Pfluger (G.)... 94	..	..	
H. J. Carr..... 97	20	77	
W. G. Tyler.....102	26	76	
R. Savill 96	20	76	
A. M. Maddock...104	25	79	
G. Hoffman (G.).113	..	..	
P. J. Faherty....115	35	80	
H. Speakman ...118	35	83	

Among the guests at the tournament and dinner were: Robert Ottke, A. B. Campbell, F. H. Elliott, R. W. Willis, Wm. Robelen, A. B. Seither, Jack Speakman, W. A. Speakman, Jr., W. T. Interlied, A. N. Kuschan, A. A. Scharnagl, G. R. Duncan, J. F. Wright, B. C. Reuter, G. F. Sauter, S. Pfluger, George Hoffman, W. L. Ridgway, J. E. Stiegler, H. P. Croney, R. C. Bamberger, Frank Riddell, W. W. Muench, E. Ball, Wm. Bland, Jas. Erskine, W. H. Held, W. C. Jones, Daniel Keating, C. J. Muend, L. J. Laroche, C. A. Rainear, W. W. Seig and H. L. Springer.

Prizes were contributed by the following members: J. W. Worthington of Canfield Rubber Co.; Philip J. Faherty and C. P. Hackett of Pierce, Butler & Pierce Mfg. Corp.; H. H. Held of Kohler Co.; J. W. Worthington of M. S. Little Mfg. Co.; Frank L. Wilson of Standard Sanitary Mfg. Co.; Jas. D. Erskine of the Erskine Copper Radiator Corp.; J. W. Worthington of the Union Brass & Metal Mfg. Co.; H. G. Kleinman; Frank Newton of the United States Sanitary Mfg. Co.; Fred J. MacKenzie, Trenton Potteries Co.; Raymond Groff of S. S. Fretz, Jr., & Co.; as well as a number of prizes by the Speakman Co.

Final Meet of Eastern Trade Golfers

The Eastern Trade Golf Association closed a most successful season on the Canoe Brook Country Club links on September 13. The committee is to be congratulated upon the excellent courses secured and upon their arrangements with the "weather man" throughout the whole season. Canoe Brook was a particularly happy choice, as it consisted of two fine eighteen hole courses, which added considerable attraction to the day's play.

Two interesting competitions featured the closing meet. The first being the "Wallace M. Cosgrove Memorial Trophy," in honor of the late charter member of the Association, and donated by Don M. Forgan of the American Radiator Co. This prize was a fine set of Bobby Jones matched irons in a leather golf bag. It was awarded for the best low net, 36-hole score, the first 18 of which was selected from the best 18-hole round of any of the first four meets, and the second 18-hole round selected from the best round played at Canoe Brook. This handsome prize was won by President S. C. Carrier, with a total net of 141. The second feature was the Hinrichsen Trophy donated by A. F.

Hinrichsen and Mr. John C. Kjerner of A. F. Hinrichsen, Inc., consisting of two prizes, each a silver dish. Eight players qualified, having been selected by taking the average of their two lowest net 18-hole scores for different courses for the first four meets.

18-Hole Handicap

	G.	H.	N.		G.	H.	N.
W. A. Davis	94	14	80	J. C. McDonald..	94	15	79
	97	14	83		93	15	78
W. H. Carrier...	103	26	77	E. Bauman	104	25	79
	102	26	76		112	25	87
W. J. Osborn...	82	13	69	T. W. Powers ...	97	18	79
	91	13	78		95	18	77
H. Jackes	95	20	75	A. Glore	87	13	74
	98	20	78		95	13	82
A. Hinrichsen ..	86	18	68	R. G. Bookhout..	100	29	71
	103	18	85		107	29	78
J. Kjerner	82	6	76	L. B. Harrison...	105	29	74
	75	6	69		105	29	74
I. Kellogg	93	8	85	H. Bartlett	105	20	85
	96	8	88		98	20	78
H. Sleik	94	14	80	A. P. Keasbey...	97	18	79
	95	14	81		91	18	73
H. W. Reis	106	23	83	B. Cummings ...	113	26	87
	112	23	89		109	26	83
J. B. Garfield ...	87	9	78	M. F. Morris....	107	18	89
	82	9	73		106	18	88
G. M. Scott	102	21	81	W. C. Mumford..	103	26	77
	97	21	76		120	26	94
C. S. Wood.....	104	22	82	D. W. Hughes...	85	9	76
	98	22	76		89	9	80
S. C. Carrier.....	79	7	72	W. H. Driscoll...	112	27	85
	89	7	82		106	27	79
H. Townsend ...	98	12	86	B. K. Strader...	102	29	73
	87	12	75		106	29	77
D. A. McKay....	84	8	76	J. T. Midyette...	101	23	78
	85	8	77		..	..	..
F. A. Murray...	87	12	75	A. E. Stacey.....	..	..	..
	95	12	83		107	25	82
D. H. Roney	93	18	75	W. H. Murphy...	116	30	86
	92	18	74		..	..	..
R. Smith	95	11	84	O. M. Forgam...	103	24	79
	100	11	89		..	..	..

Prize Winners

Cosgrove Memorial: S. C. Carrier—141. Set of Bobby Jones matched irons and golf bag.

Best 36-Hole Gross: John Kjerner—157. Cocktail shaker.

Hinrichsen Trophy: D. A. McKay and J. C. McDonald. Silver dish each.

Pairing for Hinrichsen Trophy

Foursome No. 1

S. C. Carrier
S. C. Carrier
Harold Townsend
D. A. McKay
F. A. Murray
D. A. McKay
D. A. McKay

Foursome No. 2

A. R. Glore
A. R. Glore
T. M. Powers
J. C. McDonald
J. C. McDonald
J. C. McDonald
E. Bauman

Best Low Net—36-Hole Handicap

1. John J. Kjerner—147. Carrier prize, bridge table and 4 trays.
2. Arthur Hinrichsen—153-18. Fleisher prize.

18-Hole Handicap

1. W. J. Osborn—71-13. Golf bag.
2. R. G. Bookhout—71-29. Desk clock.
3. J. B. Garfield—73-9. Zipper bag
4. A. P. Keasbey—73-18. Ice dish and tongs.
5. B. K. Stroder—73-29. 3-stage shelf holder.
6. A. R. Glore—74-13. Traveling kit.
7. D. H. Roney—74-18. Electric clock.
8. L. B. Harrison—74-29. 2-tier shelf holder.

Guests' Event

	G.	H.	N.		G.	H.	N.
E. Rorke	86	8	76	W. J. Murray...	81	7	74
John McIntosh...	98	25	73	W. A. Berbusse..	86	12	74
D. J. Kelly.....	101	16	85	A. E. Barlow...	100	28	72
C. M. Hunt.....	93	25	68	Winner, A. E. Barlow			
Phil Cosgrove ..	100	25	75				

BOILER SOLDER SEAL
PATENTED MAY 10, 1921 JANUARY 4 1927
TRADE SOLDER SEAL MARK
"THE METALLIC POWDER"
BOILER REPAIR
PERMANENTLY REPAIRS LEAKS IN STEAM AND HOT WATER
HEATING BOILERS
MANUFACTURED BY
RADIATOR SPECIALTY COMPANY
CHARLOTTE, N. C. U. S. A.

SAVE THE COST
of new boiler sections
BOILER SOLDER SEAL
repairs them
PERMANENTLY!

BOILER SOLDER SEAL with its *metal to metal contact* affords you an opportunity to develop profitable business right now and builds a reputation for you that will be productive of future business.

Today your customers are really "tight-fisted." They are cagey in their business transactions and when you prove to them that BOILER SOLDER SEAL eliminates the necessity of buying a new boiler section in the event of a leak—that BOILER SOLDER SEAL effects a repair that will withstand as great a pressure as the boiler—that ordering and waiting for a new section can be made unnecessary through the use of BOILER SOLDER SEAL, then you have created some money-making business.

Of equal importance is the fact that BOILER SOLDER SEAL repairs leaks in *hot water systems* as well as steam.

One can is equal in quantity to two quarts of liquid—no comparison in performance.

Free work gloves are packed in each 6-can carton. Try Solder Seal on one job. Learn for yourself the value of BOILER SOLDER SEAL as a money-maker.

RADIATOR SPECIALTY CO.
CHARLOTTE, N. C. U. S. A.
Canadian Plant and Office: 520 King St., W., Toronto, Ont.
Manufacturers of W J Boiler and Heating System Cleanser—"It Vaporizes"

BOILER SOLDER SEAL
"THE METALLIC POWDER"

Oh, Yeah?

"NOBODY'S buying anything. No building going on, no remodeling. You can't sell anything these days."

So goes the lamentation in the plumbing trade. It's a tough world, all right.

But a western plumber, assisted by his jobber and a Weis representative, sold 30 WEISWAY and 15 WEISTALL cabinets for two buildings where cement plaster walls and concrete receptors with lead pans had been specified. It took some work, of course, but it resulted in a nice profit for all concerned.

And in New York City, the owners of an apartment house in process of remodeling were considering tile showers when an aggressive plumber got on the job. Result 14 WEISWAY Cabinets sold, and profit for the *plumber* instead of the *tile men*.

Business is certainly rotten. No matter how hard you work, you can't sell anything.

Oh, yeah?

HENRY

Established WEIS *1876*

MANUFACTURING CO., INC.

ELKHART, IND.

Chicago Plumbing Contractors Close Golf Season

The final golf tournament of the Plumbing Contractors' Association of Chicago was held on October 6.

Members' prizes in Class A were won by Charles W. Jones, Peter M. Munn and Ed. Mortimer; in class B, by William F. Knauss, Henry Reger, R. J. Weber and E. C. Wagner. Associate members' prizes in class A were won by W. J. Spillane, John Madden and W. K. Glen; in Class B by Fred Wagner, Ed. Hoelscher, Jr., Frank Fabri, Ralph Lindblad and Glen Tellefson.

Flight winners were W. A. Brown, Louis Schmaus of Milwaukee, E. C. Wagner, Dr. A. Hanson, Frank Hackett, Charles Alcock, Robert Sells, Henry Swade, W. S. Eadie, K. McKenzie, W. G. Siewerth, Henry O'Callaghan, Charles Dreier.

Class A members, who were the season prize winners for four low games were Charles W. Jones, 299 and Ed. Mortimer, 299. Mr. Jones' handicap was 15 and Mr. Mortimer's 17. The prize was given to Mr. Jones.

In the Class B group, H. P. Reger's score was 318 as was Henry Swade's. Mr. Reger's handicap was 24 with Mr. Swade having a 28 handicap. The prize was given to Mr. Reger.

Class A associate member prize was given to Joe Comer with a 296 and Class B to Frank Fabri with 292.

This year Frank Fabri's name will be placed on the challenge trophy. The scores were:

	G.	H.	N.		G.	H.	N.
Chas. W. Alcock	112	24	88	John Madden	96	19	77
W. P. Arnold	109	21	88	K. McKenzie	107	20	87
John Blair	120	28	92	Ed. Mortimer	103	17	86
Wm. Brockman	122	30	92	Peter M. Munn	104	22	82
Earl Brown	125	30	95	Dr. Neal	89	20	69
Walter Brown	127	33	94	H. O'Callaghan	104	15	89
H. H. Diedesch	119	31	88	H. P. Reger	104	24	80
Chas. A. Dreier	116	25	91	R. V. Sawhill	107	21	86
Wm. S. Eadie	120	32	88	Louis Schmaus	121	29	92
Frank Fabbri	99	19	80	Robt. Sells	94	12	82
James W. Fettes	118	23	95	A. G. Siewerth	107	20	87
W. K. Glen	91	10	81	W. J. Spillane	92	15	77
Frank Hackett	112	18	94	Henry Swade	111	28	83
Dr. A. Hanson	114	19	95	Glen Tellefson	91	19	72
Ed. Hoelscher, Jr.	102	25	77	E. C. Wagner	111	28	83
Chas. W. Jones	94	15	79	Fred Wagner	97	28	69
W. F. Knauss	104	24	80	R. J. Weber	106	24	82
Ralph C. Lindblad	98	21	77				

Heating Trades Golfers Hold Successful Meet

The Heating Trades Golf Association recently held a most successful tournament on the links of the Oak Hill Country Club at Fitchburg, Mass., with a good attendance. The prize winners of the day were as follows: First low net, Walter Illig; second low net, C. F. Tierney; third low net, J. F. Tuttle and Ralph Franklin; fourth low net, F. T. Scott; fifth low net, J. G. Ross. The winner of the low net guest prize was J. F. Murphy.

The individual scores follow:

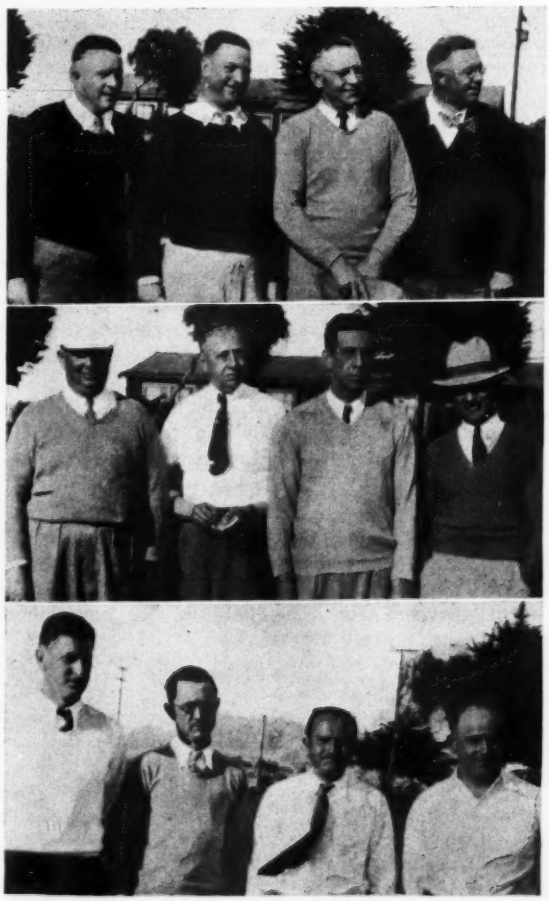
	G.	H.	N.		G.	H.	N.
John G. Ross	94	11	83	*F. Bell	112	32	80
*Abe Charest	180	..	..	*M. A. Hamilton	103	20	83
*Herbert Jacobs	105	26	79	J. Farrington	90	7	83
J. J. Milliken	104	17	87	J. J. Riely	120	33	87
R. Roberts'n, Jr.	111	23	88	*H. A. Rivers	106	22	84
F. T. Scott	99	18	81	J. F. Tuttle	90	10	80
*J. F. Murphy	91	18	73	R. S. Franklin	95	15	80
M. S. O'Brien	87	10	77	T. O. Callahan	108	19	89
*E. Morris	107	20	87	*H. Day	120	30	90
J. Bride	104	18	86	E. F. Tierney	104	28	76
W. Illig	89	14	75	J. F. Dwyer	105	16	89
*R. Parks	100	26	74	*W. Dooley	119	28	91
C. F. Flint	96	10	86	*K. Kimball	110	24	86
*S. K. Smith	99	18	81	*Guest			

S. F. Trade Group Golf and Dine at Union League Club

Perfect golf weather, a beautiful 71-par course, plenty of goodfellowship and the prospect of a wholly satisfying dinner—these were the logical reasons for the success of the September tournament of the Plumbing and Heating Club of San Francisco and the Bay Cities, which took place on the 15th, at the Union League Golf and Country Club, situated on the peninsula twenty miles below San Francisco.

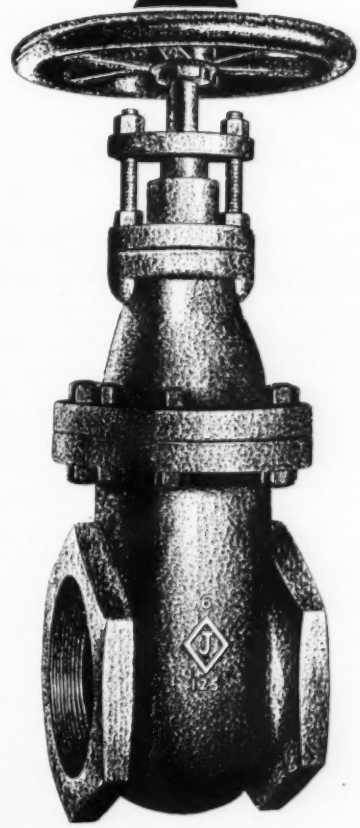
While the Plumbing and Heating Club is representative of the three branches of this industry, it was the plumbing members who annexed the bulk of the afternoon's honors, the blind bogey prize, to which members and guests alike were eligible, going to J. J. McLeod after winning the toss to decide his tie with Morris Greenberg, and the Class B trophy being awarded to Jack Camp who shot a net 71. Class A honors went to Jas. D. Fleming with a net 67.

As a result of the new policy of persistent circularization of the trade, a number of membership applications have been received and favorably acted upon, the



Above: F. M. Gabbart, H. H. Hoopes, J. McLeod, Frank Mosher. In center: M. Greenberg, Martin Doerr, Stuart Greenberg, William Rowe. Below: E. Gudelj, H. P. Wilson, Harry Hartman, S. C. Aitchison. Taken at Plumbing and Heating Club tournament

VALVES BY JARECKI



Jarecki claims no special advantage in the matter of valve design. In common with other leading manufacturers, it makes use of the most modern principles that engineering science has evolved.

Jarecki valves ARE different, however, in that they embody an *extra measure* of strength and safety. Standard Jarecki practice calls for testing far *beyond* working pressure ratings.

That explains their extraordinary service record. It will pay you to standardize on them.

JARECKI
MANUFACTURING COMPANY
ERIE, PA., U. S. A.

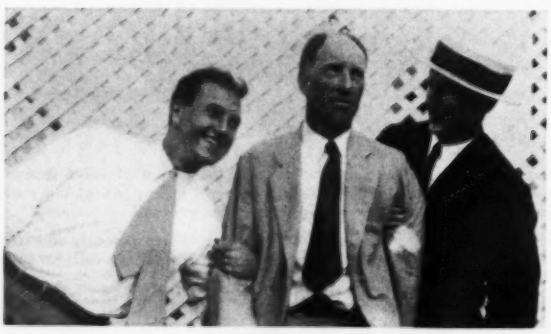
three newest members being J. V. Greer of Spang, Chalfant & Co., Inc., Jas. D. Fleming of Grinnell Co. of the Pacific, and Thos. F. Smith, of Pacific Plumbing and Heating Supply Co.

	G.	H.	N.		G.	H.	N.
Fleming	84	17	67	Greenberg	99	22	77
Camp	94	23	71	Gayner (Guest)	91	..	91
Fuite	105	21	84	Turner, D.	91	19	72
Lawson	95	19	76	O'Hair	94	15	79
McLeod	87	15	72	Gabbert	90	18	72
Olsen	104	30	74	Kraus	109	25	84
Ceaser (Guest)	86	..	86	Higgins	102	21	81
Hensley	99	23	76	Brown (Guest)	96	..	96
Schimpferman (Guest)	83	..	83	Turner, W.	91	14	77
Elliott	84	9	75	Taylor	90	15	75
Rainwater	90	19	71	Greer	94	18	76
Young	81	11	70	Gordon (Guest)	96	..	96

Chicago Master Steamfitters' Sixth Annual Golf Tournament

About fifty members and guests were present at the sixth annual golf tournament of the Chicago Master Steamfitters' Association which was held on September 22. J. Kiley was the winner with low gross of 79, J. Usher coming in second with 87. First low net went to R. Getschow with 92-22-70, C. W. Johnson, coming in second with 96-27-69. Blind bogey was won by Louis T. Braun, John Krez and Charles Crone.

	G.	H.	N.		G.	H.	N.
Abrahamson, P.	104	30	74	Shrogren, R. C.	91	14	77
Allen, H. D.	124	36	88	Usher, Jno.	87	21	66
Berry, R.	98	16	82	Wacholz, L.	125	36	89
Black, F. C.	131	36	95	GUESTS			
Braun, L. T.	91	21	70		G.	H.	N.
Brunner, L.	95	24	71	Barrows, Chas.	98	18	80
Crone, Jr., C.	97	24	73	Baumgarten, C. M	..	..	..
Dickerson, G.	106	17	89	Casey, E.	107	28	79
Dilzer, F.	140	36	104	Chenoweth, W. H.	103	19	84
Doose, J. H	94	18	76	Doherty, R.	90	8	82
Ellis, E. E.	95	13	82	France, F. S.	104	30	74
Emerson, E.	115	36	79	Fries, R. C.	107	30	77
Getschow, R.	92	22	70	Howatt, J.	87	16	71
Hanson, Jno.	92	14	78	Kiley, J.	79	8	71
Hoier, W. V.	99	28	71	Kreisel, H. G.	139	36	103
Jonson, C. W.	96	27	69	Krez, Jno.	109	30	79
Kelly, T.	87	10	77	Lockie, A.	103	30	73
Kilander, A.	99	21	78	Rand, Chas.	112	27	85
McCauley, J. H.	118	36	82	Rosen, J.	105	30	75
Metzger, L. J.	123	36	87	Sawhill, R.	96	24	72
Moran, F.	113	30	83	Stackhouse, R. M.	95	23	72
Nilson Karl	101	14	87	Standaert, R. L.	109	30	79
O'Shea, F.	106	28	78	Voss, H.	109	30	70
Olson, Roy	96	25	71	Witt, S. A.	95	23	72
Pope, S. A.	94	12	82	Wolf, H. J.	131	30	101
Reynolds, S. J.	111	30	81	Wurster, O. G.	105	30	75



Left to right: H. S. Ortgies, Crane Co.; Harry Coe, Sloan Valve Co., and W. D. Pinkham, Malleable Iron Fittings Co., at a recent golf meet of the Connecticut Plumbing and Heating Trades Golf Association

Connecticut Plumbing & Heating Golfers September Meet

The regular monthly meet of the Connecticut Plumbing and Heating Trades Golf Association was held at Wethersfield Country Club, Thursday, September 22. Although it was slightly cloudy it was an ideal day. The twenty-four members and guests playing enjoyed a very pleasant round. Prizes were awarded as follows:

Handicap 0 to 20

Low gross—Toastmaster toaster: Won by D. J. Malloy, 78.
Low net—Windbreaker jacket: Won by Thos. Firth, 91-19-72.

Handicap 21 to 30

Low gross—Windbreaker jacket: Won by Geo. Dugdale, 89.
Low net—Windbreaker jacket: Won by T. F. Byrnes, 99-29-70.

Handicap 31 to 40

Low gross—Golf bag: Won by H. E. Coe, 113.

Guest Prize

Low gross—One-half dozen golf balls: Won by W. McNerney, 98.

Western Trade Golf Association Plays Fifth Tournament

The Western Trade Golf Association of Chicago played No. 4 course at Olympia Fields on September 15 and enjoyed thoroughly the beauty and test of golf this famous course presents. It was the association's fifth tournament of the season which is scheduled to close on October 7 with a tournament at North Shore Golf Club.

R. E. Moore of Bell & Gossett Co. won the chief honors of the day by taking first in classes A and B and getting his name on the association cup. J. H. Milliken, American Air Filters, Inc., and vice president of the association, placed right behind Moore in the same class. H. W. Mollison of National Tube Co. led the way in class C, followed by T. A. Callaghan, Federal Pipe & Supply Co. E. J. Gossett made it a field day for Bell & Gossett Co. by winning first in class D, while Carl Johnson, heating contractor and treasurer of the asssociation, was second in this class.

J. W. Stanfiel, Stockham Pipe & Fittings Co., won blind bogey. J. P. Kiely, Boylston Steam Specialties Co., won the special prize for lowest number of strokes on three holes. J. W. Stevenson was the winner of the guest prize.

W. H. Lotts, F. H. Paschen and W. H. McFarland advanced to the final round of the association championship matches, while Charles Thumm and Clayton Paschen survived for the finals in the consolation matches.

	G.	H.	N.		G.	H.	N.
E. E. Bolte	95	14	81	H. P. Reger	106	18	88
J. W. Stevenson (Guest)	85	..	..	J. A. Cook (G.)	106	..	..
E. F. Smith	90	14	76	R. M. Stackhouse	98	20	78
J. W. Stanfiel	96	17	79	C. E. Price	106	18	88
F. H. Paschen	97	13	84	R. Getschow	103	22	81
J. P. Kiely	83	5	78	S. L. Barber	100	18	82
R. E. Moore	91	17	74	W. M. Brayton	110	19	91
J. H. Milliken	84	9	75	R. B. Hayward	98	20	78
W. H. Lotts	101	13	88	H. W. Mollison	94	20	74
W. A. Taylor	111	15	96	E. W. Rietz	99	24	75
C. F. Paschen	96	15	81	E. J. Gossett	106	25	81
G. H. Dickerson	104	18	86	C. Johnson	116	25	91
E. P. Heckel (G.)	97	..	..	R. E. Hattis	144	30	114
F. Wescher	113	23	90	J. J. Whalen (G.)	111	..	..
C. Thumm	100	19	81	O. G. Smith (G.)	113	..	..
E. G. Groves (G.)	112	..	..	J. M. Manion (G.)	102	..	..
M. G. Harbula	98	22	76	G. G. Turner	118	27	91
T. A. Callaghan	93	18	75	A. G. McDonald (Guest)	No card		

Exhibit of the Revere Copper and Brass, Inc., New York City, at the recent exhibition of the National Association of Master Plumbers

Chicago Contractors Hold Golf Tournament

The September golf tournament of the Plumbing Contractors Association of Chicago attracted a good attendance of members and of visiting contractors.

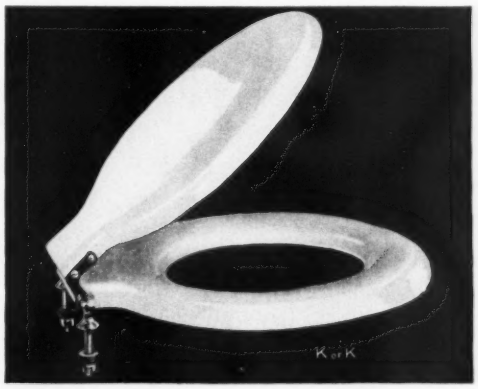
Among those from out of the city, gathered both to play golf and to honor the Illinois state president, Henry P. Reger, were H. Abele, M. Crowley, Fred Fruehauf and Dan O'Connor, all of Peoria; Fred Bailey and C. E. Blackwell, both of Rockford; Ward Best of Quincy; C. D. Brownell and C. D. Brownell Jr., Frank Fabri, Lyle Gallivan, H. W. Haigh, Dick Johnson and Judge Leonard, all of Champaign; William Hildeman and state secretary C. A. Bolton, both of Chicago Heights. Milwaukee guests included Louis Schmaus and J. Dengel.

Member prizes in Class A were won by E. Mortimer, Peter M. Munn and C. A. Bolton; in Class B by H. P. Reger, Henry Swade, R. Lindblad and Charles Alcock. Associate member prizes in Class A were won by Joseph Comer, W. K. Glen and William J. Woolley; in Class B by Fred Wagner, William Brookman, Frank Fabri and Charles Jones. Guest prizes were won by Glenn Tellefson, Lyle Gallivan, Judge Leonard, C. W. Douglas and C. B. Adams. Special guest prizes went to Ward Best, Dick Johnson, C. D. Brownell Jr. and B. Abele. Flight winners were K. McKenzie, A. Jolliffe, William Lee, C. E. Blackwell, Fred Bailey, C. W. Douglas, Lyle Gallivan, John Blair, R. M. Cavanaugh, Dick Johnson and H. H. Smith. The record of scores follows:

	G.	H.	N.
H. Abele	105	24	81
C. B. Adams	91	14	77
Chas. W. Alcock	105	24	81
Fred Bailey	116	25	91
Ward Best	93	14	79
C. E. Blackwell	101	15	86
John Blair	115	28	87
C. A. Bolton	108	22	86
W. R. Brookman	105	30	75
C. Brownell	93	13	80
C. Brownell, Jr.	103	15	88
R. M. Cavanaugh	114	25	89
Joe Comer	79	9	70
Mike Crowley	109	19	90
Jack Dengel	119	25	94
C. W. Douglas	83	6	77
Frank Fabri	97	19	78
Geo. Feldkamp	110	28	82
James Fettes	109	23	86
Fred Fruehauf	110	25	85
Lyle Gallivan	82	7	75
Wm. Glen	79	10	69
John Gore	124	30	94
H. W. Haigh	95	17	78
Wm. Hildeman	103	21	82
Dick Johnson	109	30	79
Art Jolliffe	102	18	84
Chas. W. Jones	95	15	80
Wm. F. Knauss	115	24	91
S. C. Lasley	111	22	89
Wm. Lee	99	15	84
Judge Leonard	97	22	75
Ralph Lindblad	102	21	81
W. L. Lovejoy	116	30	86
Geo. Matthews	127	40	87
K. McKenzie	104	20	84
Ed. Mortimer	90	17	73
Peter M. Munn	107	22	85
Wm. Powers	128	33	95
H. P. Reger	96	24	72
Wm. St. Bernard	122	27	95
Louis Schmaus	114	25	89
H. H. Smith	103	20	83
Henry Swade	101	28	73
Glenn Tellefson	90	19	71
Fred Wagner	100	28	72
Hugh Whitney	110	24	86
Wm. J. Woolley	92	17	75
D. Zwick	109	17	92

BUSINESS OPPORTUNITY

Home owner in this vicinity has decided to renew bathroom. Feels time has come to spend some money. Interested especially in new closet seat. Plumber who can install high-quality seat at reasonable price apply at once. May prove opening for other new business.



PLENTY of people have about reached the point where they'll spend money renewing the home. And plenty of plumbing contractors know that the easiest way into the bathroom is to replace the old closet seat. Get your share of this business by selling high-quality Kohler Regent seats—at the lowest prices in years!

Cores of Regent seats are made from selected seasoned birch wood thoroughly kiln dried, so that they contain a minimum of 5%-7% moisture. Reinforcement of wood dowels forced into the seat cross grain prevents warping, cracking and splitting.

Sheet covering on Regent seats is of the same high quality as on much more expensive K of K seats. An overlap feature assures double duty service at edges. Joints are cemented thoroughly to perfect water-proofing. *Each seat is inspected seven times in process of manufacture.* No complaints from customers with these seats!

Notice the clear smooth surface of these fine seats, made possible by an exclusive Kohler process. Finest workmanship goes clear through! *Kohler Co. Founded* 1873. *Kohler, Wis. Branches in principal cities.*

Notice the beveled edges. (A) This is the foundation of the overlapping feature which makes REGENT seats water-proof, dirt-proof and long lived.

The sheet covering is first placed on the top of the seat. Notice how the sheet is folded under to cover that portion of the bottom which has been beveled (B). The parts in dotted lines have been smoothed down to produce an even surface.

The bottom of the seat is covered last. The sheet extends clear to the edge of the seat, thus covering the beveled portion which already has one layer (C). This overlapping produces double wearing qualities and a perfect moisture-proof joint.

KOHLER OF KOHLER

PLUMBING FIXTURES AND FITTINGS

TRADE

NEWS OF PLUMBING AND HEATING CONTRACTORS

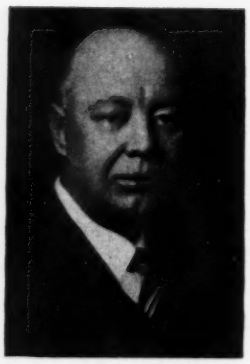
President Kleine Names N. A. M. P. Directors

PRESIDENT E. B. KLEINE of the National Association of Master Plumbers has announced the names of the members of his board of directors and of the various committees, who have consented to serve the organization for the coming year. Many of them have had previous experience in leading national activities.

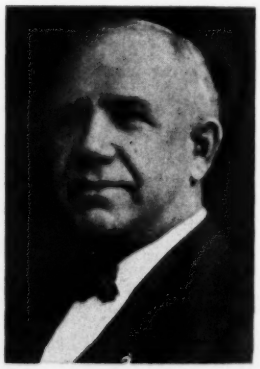
The new directors who will work with Mr. Kleine, Vice President Robert J. Barrett, Secretary Edward Frank and Treasurer H. O. Green, are: P. W. Donoghue, Boston, Mass.; John J. Calnan, Chicago; George H. Drake, Buffalo, N. Y.; Wilbur R. Dosher, Wilmington, N. C.; Joseph W. Pate, Birmingham, Ala.; George F. Reeke, Green Bay, Wis.; Harry L. Stevens, Hutchinson, Kansas; Charles M. Swinnerton, Los Angeles, Calif.; Richard G. Thomas,

Edward B. Kleine, President

Robert J. Barrett, Vice President

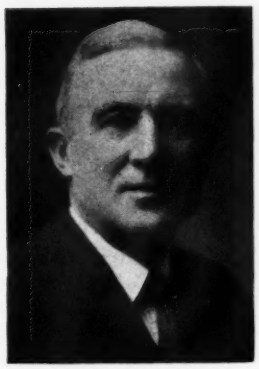


H. O. Green, Treasurer



Edward Frank, Secretary

John J. Calnan



P. W. Donoghue

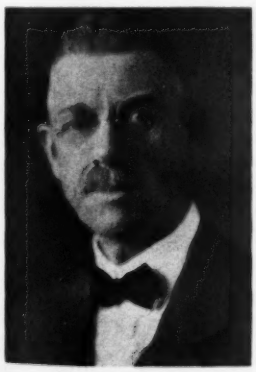
Wilbur R. Dosher

George H. Drake

Joseph W. Pate

George F. Reeke

Harry L. Stevens



Charles M. Swinnerton

R. G. Thomas

Roy E. Thompson

George H. Werner

San Antonio, Tex.; Roy E. Thompson, Tacoma, Wash., and George H. Werner, Orange, N. J. Of these Mr. Calnan and Mr. Pate are newcomers to the national board but like the other members are veterans in both State and local association activities.

At the same time President Kleine announced his national committee members, as follows:

APPRENTICESHIP COMMITTEE: Benj. J. Seckinger, chairman, Atlanta, Ga.; Herman E. Ysberg, Saginaw, Mich.; William H. Grabowsky, Canton, Ohio; C. V. Swann, Huntington, W. Va.; Charles M. Chapman, Jacksonville, Fla.

CONFERENCE COMMITTEE: Maney J. Feeney, chairman, Philadelphia, Pa.; Walter Klie, Cleveland, Ohio; Jos. G. Hayes, Indianapolis, Ind.; Sam A. Rice, Oklahoma City, Okla.; Henry J. Ritter, Buffalo, N. Y.

SCHOLARSHIP COMMITTEE: John J. Vogelpohl, chairman, Cincinnati, Ohio; George H. Drake, Buffalo, N. Y.; Richard J. Welch, Lowell, Mass.; Jere Sheehan, Jr., St. Louis, Mo.; E. B. Kleine, Cincinnati, Ohio.

STANDARDIZATION COMMITTEE: Jere L. Murphy, chairman, New York, N. Y.; Joseph H. Bilheimer, Little Rock, Ark.; E. G. Harris, Richmond, Va.; Earl L. Clevenger, Muncie, Ind.; John M. Wilbers, Louisville.

PLUMBING AND HEATING INDUSTRIES COMMITTEE: P. W. Donoghue, president, Boston, Mass.; Robert J. Barrett, Washington, D. C.; George H. Drake, Buffalo, N. Y.; E. B. Kleine, Cincinnati, Ohio.

Northern California Federation Discusses Direct Purchase from Manufacturers

THE sixth conference of the Northern California Federation of Plumbing and Heating Industries took place at the Leamington Hotel in Oakland on the afternoon and evening of September 24, being well attended by master plumbers from all over northern and central California, including the majority of the officers and directorate of the state association of master plumbers, and many executives of manufacturers and wholesalers.

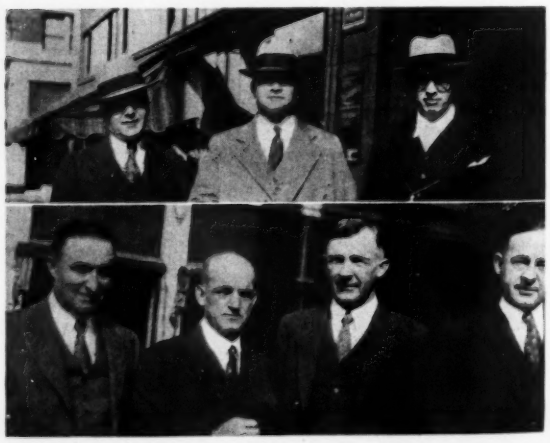
Robert Duncan, President of Alameda County M.P.A.

The banquet was attended by more than one hundred and twenty-five members, their wives and guests with President Robt. Duncan, Jr., of the local association, as toastmaster. Following the banquet, the ladies adjourned for whist at the invitation of Mrs. W. D. J. Evans, president of the Oakland Auxiliary, while the men listened to three addresses. At 10:00 o'clock the ballroom was cleared for dancing, which occupied the balance of the evening.

The afternoon session for master plumbers was taken up with the subject of purchasing materials from an organization formed and designed to sell and warehouse plumbing supplies by dealing directly with the manufacturers and contractors. The buying would be handled between the master plumbers and this company by means of another organization known as United Merchant Plumbers, Inc. Membership in the latter organization would be open to master plumbers upon payment of a nominal monthly sum, the plumber to purchase his goods, it is reported, at a price approximating 5 per cent above jobbers' costs.

Frank Lindstrom of the Peninsula Master Plumbers Association, spoke on the advantages of this system, claiming that it eliminated the excessive costs of the plumbing jobber and placed materials in the hands of the plumber at approximately 5 per cent above jobbers' costs. Mr. Lindstrom also held that a much better control of credits may be arranged for under this system.

J. V. Young of San Francisco, past president of the California State Master Plumbers Association and secretary of the Northern California Federation of Plumbing and Heating Industries, spoke against this system of purchasing, stating that both the Federation and the executive board of the state association wished to go on record as being opposed to such program. Mr. Young gave the following reasons for such opposition:



Top row, left to right: N. J. Previati of Oakland; P. E. Brand, president of Redwood City M. P. A., and Jas. F. Mauzy, Walnut Creek, vice president of Northern Calif. Federation.—Bottom row, left to right: C. A. Merritt of San Jose and J. V. Young of San Francisco, Federation director and secretary, respectively. B. E. Newman of Fresno, and H. G. Newman, Federation president and past president of the State association

(1) That the committee appointed by the Federation, of which Mr. Young was chairman, had failed to find any difference between this distributing corporation and any other wholesale or jobbing house, and that there was nothing brought forward to show that this company idea originated from any desire to promote the interests of the master plumber, but rather to sell plumbing material direct, and that the direct selling idea, it was felt, was stopped temporarily by a proposal to enlist a sufficient number of master plumbers to purchase these supplies; and that, furthermore, if a sufficient quantity of merchandise was not moved there might be danger of the distribution corporation selling direct.

(2) That the California State Master Plumbers Association had at its Oakland convention in May adopted a resolution which is designed to bring about better relationships between the manufacturer and the plumber through price control by the manufacturer or authorized dealership.

(3) That the National Association had recognized this resolution and had placed it in the hands of capable directors for suitable recommendations.

(4) That any such radical departure at such a time might have a very detrimental effect on the success of these investigations and this movement.

(5) That the National Association fully realizes the unethical and unfair practices resorted to by certain manufacturers and jobbers at this time and is taking all possible action to bring about a remedy.

(6) That the State Association and the Federation feel that when the National Association has exhausted all efforts to adjust these grievances they will perfect a suitable plan of merchandising for their members and will recommend same to them for national adoption.

(7) That this does not appear to be a new nor untried method of merchandising, similar plans having been tried under different names and methods in various localities, the majority of which have failed to produce the desired results, according to the best information.

PLACE OF THE WHOLESALER

At the evening session, Hugh Oliphant, Vice President of Tay-Holbrook Co., of San Francisco, read a paper prepared by Francis J. Baker, President of Tay-Holbrook, Mr. Baker having been called away at the last minute. The paper ably presented the case of the jobber and how he fits into the economic picture, setting forth the fact that there must be some give as well as some take on both sides, and that the willingness to proceed along such lines will go far toward the upbuilding and maintenance of more satisfactory business relationships. "We must not place too much confidence in new, novel nor untried methods of doing business." It was urged that fear and mistrust be dissipated.

The committee on arrangements for the Oakland conference were N. J. Previati, J. W. Rankin and L. J. Kruse. The officers are Harry G. Newman of Oakland, president; James F. Mauzy of Walnut Creek, vice president; J. V. Young of San Francisco, secretary; and J. B. Hawley of Sacramento, treasurer. Conference meetings are generally held quarterly at various cities throughout northern California. Date and place of the next conference will be announced by the president later.

KOVEN
QUALITY CODE

No. 2—Materials

● All steel used in the manufacture of "KOVEN" products must meet the following exacting requirements for:

a. **UNIFORM ANALYSIS**

b. **UNIFORM DUCTILITY and STRENGTH by using "Rockwell and Olsen" specifications for annealing.**

c. **UNIFORM THICKNESS OF STEEL SHEETS.**

● Purchases are made only from the largest and most modern steel plants.

● The same care is used in buying other materials such as Heads, Rivets, Spuds, Welding Rod, etc.

● In the KOVEN Galvanizing Plant only *Virgin* Prime Western Spelter is used. Thus, KOVEN Galvanized Products receive the finest protective coating of zinc that it is possible to secure.

Insist on KOVEN Range Boilers, Tanks, etc. from your jobber and build a Quality reputation for your shop . . . It costs no more!

KOVEN Products:

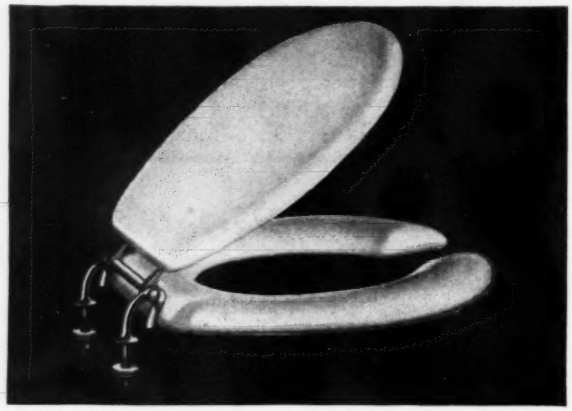
Range Boilers
Storage Tanks
Koven-Paracoil Tanks
Septic Tanks
Fuel Oil Tanks

Expansion Tanks
Pneumatic Tanks
Barber Boilers
Scullery Sinks

●

L. O. KOVEN & BRO., Inc.
154 Ogden Avenue
JERSEY CITY, N. J.

BELIEVE IT OR NOT.....



.....a Seamless sheet-covered seat

You probably will be skeptical—and we don't blame you. At first thought it does seem impossible—but so did Fulton's steamboat, Stephenson's locomotive and the Wright Brothers' flying machine.

The Bonalite sheet covering is really seamless—it is the result of an exclusive and patented process that forms the sheet and applies it to the core in one operation. This absence of seams that open up and collect dirt, germs and admit moisture is an advantage that you have never before had in a sheet covered seat; its great possibilities as a sales feature are evident.

Study the sectional view of the Bonalite seat ring shown here—note that the sheet cover is from 15/1000 to 20/1000 in. thick and not 10/1000 in. thick; also that the ring is $1\frac{3}{16}$ in. and not $1\frac{1}{8}$ in. These are important features—be sure to check them when making your comparisons with other seats.

Bonalite sheet-covered seats are made in white, black and a variety of attractive colors. The heavy brass hinges are chromium plated and highly polished. The patented construction of the core makes it unusually strong and moisture-proof; it will not warp, split, expand or contract. Bonalite seats are guaranteed.

The prices on Bonalite sheet-covered seats are surprisingly low; ask your jobber about them.

Write directly to us for a section of the Bonalite seat ring so that you can prove our statements to your own satisfaction.

AMERICAN RUBBER PRODUCTS CO.
8561 Butler Ave. Detroit, Mich.

BONALITE SEATS

"The only Seamless sheet-covered seat"

Illinois Master Plumbers Will Hold 1933 Convention in Chicago

The board of directors of the Illinois Master Plumbers' Association at a recent meeting, held in Peoria, Ill., decided to hold the 1933 state convention in Chicago, Ill., probably in the third or the fourth week in January. It is announced that special railroad rates will be in effect so that the railroad fare for members in the southern part of the state will be greatly reduced.

Tell of Gas Merchandising Plans at Philadelphia Master Plumbers' Meeting

The August meeting of the Philadelphia Association of Master Plumbers was in charge of George Hicks, vice president, due to the continued illness of Maney J. Feeney.

The members were much interested in hearing C. Edwin Bartlett, Philadelphia distributor for Ruud Manufacturing Company, tell of the latest developments in the company's new product. Edward Quaid and Walter Raid, who have been working with officials of the Philadelphia Gas Works Co., reported on work which has been accomplished in this co-operative movement. M. Oliver, vice president and general manager of the gas company explained to the plumbers how the gas company expects to co-operate in selling 50,000 gas water heaters in the next three years. He also spoke of an advertising campaign which he hoped would be beneficial to the master plumbers. At the conclusion of the meeting, Mr. Oliver invited the master plumbers to attend a meeting at the office of the Peoples Gas Works Company which is to be a regular monthly affair to teach selling and demonstrate the latest products.

At this meeting, H. S. Christman, assistant sales manager, outlined the 16 rules which will govern the financing plan and they were openly discussed. Scott Fowler, president of the Lovekin Water Heater Co. and Milton Clow of Clow Gas Steam Radiator Co., talked on the products of their companies. Over 300 were in attendance, including all the officers of the Philadelphia Master Plumbers' Association.

Report Progress in Co-operative Merchandising of Gas Appliances in Wisconsin

Representatives of gas and electric light companies, together with representatives of master plumbers, electrical dealers, and hardware men, agreed at the convention of the commercial section of the Wisconsin Utilities association, which was held in Eau Claire, Wis., August 25 and 26, that great progress has been made in co-operative merchandising of gas appliances during the past year.

John P. McCoy, Fond du Lac, Wis., president of the Wisconsin Master Plumbers' Association, stated that the utility company operating in his territory has tried to co-operate with the members of the plumbers' association.

"Before the adoption of the co-operative merchandising principles," said Mr. McCoy, "I think I am correct in saying that the general opinion of most

plumbers was that they would be better off if the utility companies would be compelled to discontinue their sales of appliances. Since then, and after careful observation, I think this opinion has changed, especially in this state."

Ten specific recommendations for more practical co-ordinated sales co-operative arrangements between public utilities and plumbers, hardware men, and electrical contractor dealers were made by C. E. Greenwood, New York, commercial directors of the National Electric Light Association. Mr. Greenwood spoke at the dinner meeting Thursday evening.

He pointed out that unless public utilities and contractor dealers co-ordinate their sales efforts more effectively, department stores would dominate the retail market.

"Last year the electric utilities sold approximately 17 per cent of the total volume of electrical household devices," Mr. Greenwood pointed out. Public utilities, by active merchandising, keep quality standards of appliances high and develop the market for new appliances.

R. O. Jasperson, chairman of the commercial section of the Wisconsin Utilities Association, stated that a co-operative merchandising committee has been established to afford the various trade groups a means of contact with the utilities of the state.

"As chairman of that committee," Mr. Jasperson said, "I predict amicable disposal of all merchandising problems between utilities and trade groups. The utility executive who does not welcome the activities of dealers in gas and electric appliances and who by unfairness injures such outlets is shortsighted indeed.

"There is also the point to be considered that time payment should be gauged so that dealers will not be placed at an undue disadvantage. Much of the criticism against utility merchandising is based upon what is believed by dealers to be unduly long terms and inadequate down payments. From this standpoint as well as from the standpoint of possible re-possessions it is advisable for us to scrutinize carefully the credit of our buyers and see to it that we do not unduly burden our companies with extended time payments."

Successful Zone Meetings in Massachusetts

A series of very successful zone meetings are being held in Massachusetts at the present time addressed by Professor Schaefer of the Massachusetts Institute of Technology. The most recent meetings were held at Hyannis, September 28, and at Salem, October 6. The next zone meeting will be held at the Chamber of Commerce in Worcester at 8 p.m., October 19. Several members, who have heard Professor Schaefer's address on "Master Plumbers and Massachusetts Law," are now following him from meeting to meeting, intent upon absorbing helpful information and applying it to their business.

Resigns as New Orleans Secretary

E. L. Kimble has resigned as business manager of the New Orleans, La., Association of Master Plumbers. He has been associated with the organization for eight years.

PHOENIX BRASS FITTINGS

Inspection after Casting.

Inspection prior to Threading.

Inspection of Threading.

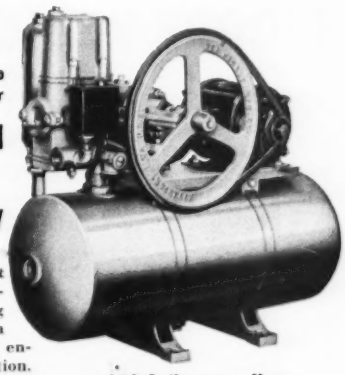
Air-Under-Water pressure test.

"If it's a 'P. B. F.' it's a Quality Fitting"

Phoenix Brass Fittings Corp.
Irvington New Jersey

$42.50 Complete to the Consumer

the Lowest Priced Shallow Well System On The Market Today



HERE, Mr. Dealer, is what you have been waiting for — a shallow well reciprocating type water system, at such an amazingly low price, as will enable you to meet all competition. There isn't any other unit which is priced to the consumer at such a low price. And, don't forget — the unit is made and guaranteed for quality and performance by the Red Jacket Manufacturing Company, makers of pumps and water systems for 57 years.

DORWARD-Red Jacket WATER SYSTEMS & DeepWell Power Heads

250 Gallons per Hour

This outfit delivers 250 gals. per hour from well or cistern up to 22 ft. in depth. Plenty of water for kitchen, bathroom, laundry, stock troughs, etc.

A Big Special Feature

A big special feature of this pumping unit is the Water Lubricated Bearings which require no oil. This means no piston rod stuffing-box leakage; no oil polluted water in pumping system; no water polluted oil in crankcase. ¼ H. P. Motor, 110 single phase motor. Pressure Switch; Relief Valve; Galvanized Tank, 8-gal. size; "V" Belt Drive. Everything complete.

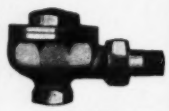
This system is priced to sell under present conditions with a margin of profit you will appreciate. *Write for discounts and complete information.*

RED JACKET MFG. COMPANY
DAVENPORT, IOWA.

Marsh System Units

A.S.M.E. Gauge

Packless Radiator Valve


Radiator Trap

No. 12 Drip Trap

No. 5 Vent

No. 14 Heavy Duty Trap

No. 150 Radiator Valve

Air and Vacuum Valve

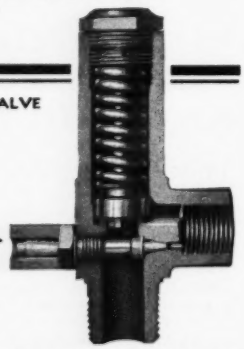
Hot Water Thermometer

JAS. P. MARSH CORPORATION
Home Office: 2079 Southport Ave., Chicago, Ill.
Sales offices in principal cities
IN CANADA: Jas. Morrison Brass Mfg. Co., Ltd., Toronto

MOORE RELIEF VALVES
Mean More Safety

PRESSURE—TEMPERATURE VALVE

Fuse carrier holding extra fuse plug. Replacement made quickly without removing valve or disturbing pressure setting.



Safe!
FROM BOILER EXPLOSIONS

Moore valves do give you real protection. They are adjustable to relieve pressure accurately from 30-200 lbs. The fusible plug is gauged to relieve when water reaches the boiling point in the boiler. Why not insist on the best?

Standard and special valve equipment.

J. W. MOORE VALVE CORPORATION
EVERETT - - MASS.

Nassau County Master Plumbers' Annual Outing

The Master Plumbers' Association of Nassau County held its seventh annual outing at Narragansett Inn, Lindenhurst, Long Island, on Saturday, September 17. The event was favored with perfect weather and approximately 140 master plumbers with their families and a number of jobbers and manufacturers were in attendance.

The start of the day's activities was the exiting baseball game between the Plumbers and the Salesmen, which resulted in a score of 14 to 1 in favor of the Plumbers. The feature of this game was the big league pitching of Philip Engledrum for the Plumbers. Andrew

Some of the picnickers at the Nassau County Master Plumbers' outing

J. Davis, business agent of Plumbers local 457, was the umpire. Every member of the winning team was awarded a pencil.

The baseball game was followed by numerous athletic events and races for men, women, young people and children with valuable prizes to the winners.

A shore dinner at night followed by dancing at the Narragansett Inn concluded the program.

Among the guests, from other associations, in attendance were: John Rogers, William Foley, N. P. Donohue, Thomas J. Whalen and Joseph Mittasch from the Queens association; George Arnone of the Bronx association, and Matthew J. Kennedy of the Brooklyn association. Building Inspector Eugen Parsons was also among those present.

Wm. J. Bloeth was chairman of the outing committee; Charles Fritz was in charge of the games and races, and the following gentlemen acted as judges: Edward J. Durr, A. G. Ziminski, Edward Seltzer, George Flourish and J. Neilson.

New Chicago Building Group Is Organized

Organization of the executive steering committee of the new Construction Industries council has been completed under direction of George W. Rossetter, president of the Chicago association of commerce. The coun-

cil was organized to attain more unified co-operation in questions affecting the local building industry, and to establish construction prices putting employer, employe and the building public on a more equitable basis. The steering committee comprises about 15 men including Homer Linn, American Radiator Co.

Milwaukee Master Plumbers to Hold Educational Meetings

The Master Plumbers' Association of Milwaukee, Wis,. has inaugurated a series of educational meetings to be held alternately with regular business meetings each month during the coming year, according to Peter King, executive secretary of the organization.

Meetings of the association are held on the first and third Tuesday of each month. Regular round-table and routine business discussions will be taken up on the first Tuesday, present tentative plans provide, while educational talks by men prominently identified with the industry will be given on the second Tuesday of each month.

At the first educational meeting held at the association headquarters at the Builders' Exchange on September 20, K. G. Lovett, of the Congoleum-Nairn, Inc., discussed the use of wall covering in the renovation and modernizing of a bathroom, and P. L. King of the Midland Finance Corp., of Kansas City, Mo., explained a plan of liquidating slow paying and past due accounts through loans made to the client's debtors.

Maryland Master Plumbers' Annual Outing

Approximately four hundred master plumbers, their families and friends, and representatives of all branches of the industry attended the annual outing of the Association of Master Plumbers of the State of Maryland, Inc., which was held in August at Brendel's Manor near Ellicott City, Maryland.

After parading in automobiles through Baltimore led by motorcycle police, the assemblage arrived at the grounds where a delicious Maryland fried chicken dinner was immediately served. Music was rendered by St. Mary's Industrial School Band.

In the afternoon crabs were served in all styles.

A very interesting baseball game was played between teams representing the master plumbers and the wholesalers and manufacturers. The hard hitting of J. H. Hendricks of the American Radiator Company won the game for the manufacturers by a score of 8 to 7. Reuben Braudes at shortstop starred for the plumbers making several double plays unassisted.

Dancing throughout the day and bathing in a swimming pool on the grounds were enjoyed by many.

A. R. McGonegal, chief plumbing inspector of Washington, D. C., Doctor J. Frederick Hempel, assistant commissioner of health of Baltimore City Health Department and George J. Fitch, chief plumbing inspector, and Carroll H. Reynolds, assistant chief inspector of Baltimore were among those present.

The committee in charge of the outing were: Gus Wirth, chairman; Samuel E. Houck, George R. Hardesty, John Frederick, Theodore Bunnecke, Charles Wachsmuth and Joseph L. Gessler.

Kings County Hospital, Brooklyn, N. Y.
Architect, LeRoy P. Ward; *Engineers*, Clark, MacMullen & Riley; *Contractor*, Daniel J. Rice, Inc.

Kings County $6,500,000 Hospital

is equipped with

SARCO

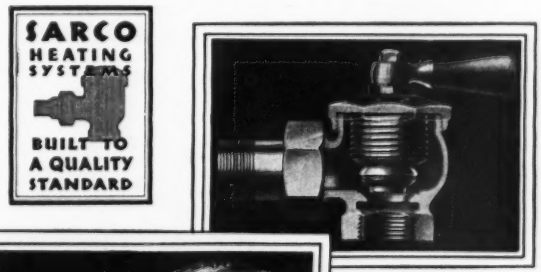
HEATING SYSTEM

Probably in no type of building is absolute dependability of the heating system so important as in a hospital. Human life often hinges on correct temperature of the rooms. So no chances can be taken.

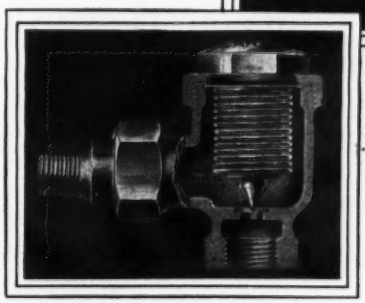
Because Sarco Heating System has proven its dependability over a long period of years in many hundreds of hospitals and other large important buildings, it was chosen for the Kings County Hospital.

The Sarco is a QUALITY system through and through. It operates noiselessly and economically. Assures long, uninterrupted service.

Many outstanding features are explained in our catalog M-45. Write for a copy



SARCO INLET VALVE



SARCO RADIATOR TRAP

Sarco, the original bellows trap, is still the only radiator trap having a bellows made from heavy wall, helically coiled tubing. Greater strength, a uniform load divided over more corrugations, necessarily make for longer life. A self-aligning valve head assures perfect seating.

SARCO COMPANY, Inc.

183 Madison Avenue, New York, N. Y.

BRANCHES IN PRINCIPAL CITIES

SARCO CANADA LIMITED

FEDERAL BUILDING, TORONTO, CANADA

PERFEX

YOU PAY NO MORE

for this unduplicated combination of features:

1 Copper and bronze core from inlet to outlet. No corrosion; no unequal expansion; no leaking.

2 Core is suspended within unit, giving complete freedom for expansion and contraction.

3 Core can be quickly removed without disturbing cabinet, motor, wiring or even the setting of the louvres.

4 Entire unit is suspended from ceiling, eliminating load and strains on piping.

5 Three point motor support.

6 Liberally rated motor and quality construction throughout.

7 Individually tested and guaranteed.

Greater experience and greater facilities make this plus value possible. Write for engineering and installation data.

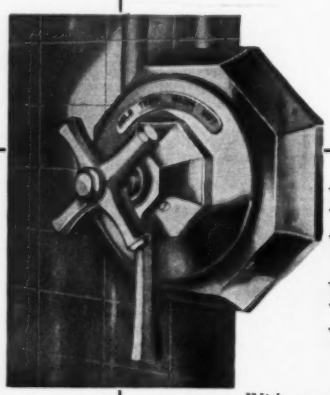
PERFEX CORPORATION

Milwaukee (*Heating Division*) Wisconsin

Heat Radiation Specialists for Over Twenty Years

Also Manufacturers of: Concealed convection heaters of advanced design and construction. Process cores for all types of pre-heating and process work.

UNIHEAT



LEONARD WATER MIXING VALVES

Without the normal building condition the natural business trend is to remodeling. This makes the Leonard Water Mixing Valve a business developer, because where will you find users of the shower bath who are opposed to a 100% safe and modern installation? And that is exactly what the Leonard will make an installation. Write for the complete story. Profit with Leonards.

LEONARD-ROOKE CO.

Incorporated 1913

Providence, Rhode Island

Trenton Master Plumbers' Twenty-Seventh Annual Outing

The Master Plumbers' Association of Trenton, N. J., held its twenty-seventh annual outing late in August, at the Car Shops Field on the Whitehead Road, with a good attendance in spite of the rainy weather. There were about 60 members and guests present, and they all had a good time. The ball game was played during the afternoon when the rain let up for a while, and a team composed mostly of plumbers won.

The outing was in charge of a committee consisting of Wm. J. Lee, John H. Conard and Anthony Dennish.

Arlington, Mass., Master Plumbers Organize

Master plumbers of Arlington, Mass., and vicinity have recently formed an association and elected the following officers: John Swenson, president; Charles P. Button, vice president; Harold Clare, secretary, and Ambrose J. Gott, treasurer. The other charter members of the association are: Joseph W. Ahearn, John B. Byrne, Chester M. Gott, Arthur J. Norwood and Thomas J. Stretton, all of Arlington, and Lawrence M. Vail and James H. Unsworth of Belmont.

This new association held an open meeting in Arlington on Tuesday, September 27, which was addressed by P. W. Donoghue, past president of the National Association and the Massachusetts state association; J. Harry McGourty, secretary of the state association, and President John Swenson. At this meeting five more members joined the association.

Vancouver Master Plumbers Want Plumbing Code Amended

The Vancouver, B. C., Association of Sanitary and Heating Engineers is making concerted efforts through the Vancouver city council and the Civic Building Committee to better plumbing conditions in that city. The association recently urged on the city that regulations should be adopted to restrict the issue of permits to plumbing firms holding city trade licenses. The council is considering the proposal. Now, any journeyman plumber in possession of an efficiency card can take out a permit by giving his number, without obtaining a trade license. The association contends that if a man of this class takes out more than one permit he automatically comes under the classification of a master plumber, and should obtain a trade license. Nothing in the plumbing by-law in Vancouver prevents a home owner from doing plumbing work in his own building, providing he conforms to the by-law and takes out his own permit. The association stressed the fact that in some cases local plumbing firms have been paying this license for the past twenty or thirty years, running from $15 to $100 per year, and that it is unfair that the journeyman is able to obtain permits without any obligation.

Robert H. Ritchie

Robert H. Ritchie, who has for many years been engaged in the plumbing and heating business on Oronoque road in Milford, Conn., died recently at Grace Hospital in New Haven, Conn., in his 49th year. He is survived by his wife, three sons and his father.

Loaning Institutions See Value of Modern Home

Plumbing and heating contractors will be interested in the following comment on the greater favor with which home loaning institutions now regard well equipped and modernized homes.

"A decided trend in modern home construction toward beauty of design, comfort, convenience and healthful living conditions is exerting a wholesome influence on the loan policy of home financing institutions," William S. Quinter, president, District Building and Loan Association, Washington, D. C., pointed out recently.

"So effective have been improved building materials and methods of application in enhancing the inherent values of the homes of today that building and loan officials in many instances are lending on a 75 per cent valuation of house and lot when it is proved to their satisfaction that money is being wisely spent to make the home comfortable and livable," Mr. Quinter added.

The Strength of Numbers and Achievement

By E. B. KLEINE, President, National Association of Master Plumbers

E. B. Kleine

THE National Association of Master Plumbers derives its inherent strength from the loyalty of its members and from the achievements which collective effort has made possible. These achievements are well known. They are largely centered around the work of the board of directors and our standing committees such as apprenticeship, scholarship, conference, and education. These committees have enabled the National Association to pursue a definite program consistently toward the goal.

Under the administration of Past National President Donoghue, the National Association was able to effect a co-operative arrangement with utilities which has put dollars into the pockets of our members. Today a total of 160 utilities serving more than 4,750,000 customers have subscribed to the merchandising principles formulated by your Association and the American Gas Association. The close relationship of plumber and utility was shown by the very extensive participation of the gas industry in our successful exposition in New York in June.

The maintenance of a permanent national office of our Association in Washington, the capital of the nation and the center of all departmental activities of our federal government, is another achievement which only collective effort has made possible. The establishment of this national office is due to the persistent and untiring effort of Past National President George H. Drake. The advantage of having an office in Washington was demonstrated last year while the National Association was carrying on an active campaign in behalf of the bills for the separation of contracts, and the prequalification of bidders.

In this connection, I should like to point out that, while the pressure of time and the stress of the great federal relief bills prevented Congress from giving consideration to either H. R. Bill No. 9975, or S. Bill No. 4342 (which is identical with the House bill) these bills are still in the hands of the committee on public buildings and grounds of each house. Consideration of these bills will be resumed when Congress convenes in December.

In the meantime, members of Congress are engaged in a campaign for re-election. It is up to the master plumbers in every congressional district to sound out the attitude of candidates on the bill for the separation of contracts. We should point out to the candidate that this bill is to the public interest in that it will insure a better installation of plumbing, heating, ventilating, and air conditioning equipment.

At this time, when a candidate is engaged in his campaign, you will be listened to with considerable interest when you point out the merits of this proposed legislation. We should by all means make the greatest possible use of our opportunity.

SERVING THE ENTIRE INDUSTRY

The sponsorship of these bills in Congress is a definite service which the National Association is performing for the entire industry. It is only one of many services. It is no more important than the continuous educational work of the National Association in behalf of better business methods, knowledge of costs, merchandising, etc. Yet, it is particularly noteworthy in that it is a specific, definite service which members should refer to in discussing membership with non-member prospects.

I should like, at this time, to emphasize the desirability, yes—the necessity, for membership promotion. We have done well in the past to hold our own in membership. Today we need not merely the strength of our existing membership, but we should bring into our Association the many non-members who are riding along free now and profiting by the work of the National Association.

I know of no better way than for every present member to make it his business to get one new member. You, who are members, are convinced of the value of Association membership, or you would not be members. The best salesman is one who is himself thoroughly sold on his product. To all members of the National Association of Master Plumbers, therefore, I offer this suggestion: Get one new member. Do not postpone this important duty. Your effort will not only benefit your local, state, and national associations, but will help the entire industry as well. Then you, as part of this great industry, will naturally obtain your share of the gain.

A few of those who attended Queens Borough Master Plumbers' Outing

Queens Borough Master Plumbers Hold Thirtieth Annual Outing

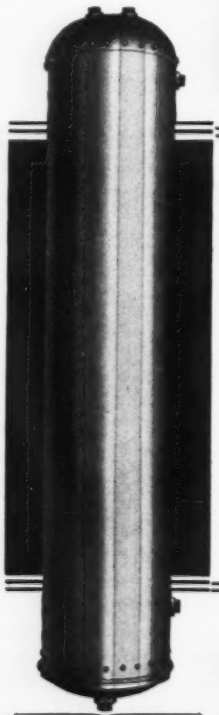
The Queens Borough Association of Master Plumbers held its thirtieth annual outing at Naragansett Inn, Lindenhurst, Long Island, on Saturday, September 24. With ideal weather for an outing about 175 master plumbers with their families were in attendance. A representative group of manufacturers, jobbers and salesmen were also present and enjoyed a day of fun.

The outing started with the annual ball game between the Plumbers and the Salesmen, which the Plumbers won with a score of 9 to 3.

A chicken dinner followed by dancing at the Naragansett Inn ended the successful outing.

The arrangement committee consisted of the following gentlemen: Joseph R. Mittasch, chairman; C. R. Budrie, N. Donohoe, J. Stockinger and J. Rogers.

Among the guests at the outing were John Tomilty, president of the Nassau Association; G. Arnone, president of the Bronx Association; M. J. Kennedy of Brooklyn and B. Woods of the water department.



G&C COPPER TANKS and BOILERS

COPPER FOR SATISFACTION

Universally Approved---the new, improved

G & C Domestic Copper Range Boiler

Corrects the faults of the ordinary hot water boiler. Drain located at low point of bottom . . . easier removal of sediment.

Riveted top and bottom with solid copper rivets—gives added strength. Guaranteed against collapse! Other advantages that make sales easy!

Write now --- for details and descriptive circular

G & C BOILERS TRADE MARK REGISTERED

SPECIFY G & C BOILERS There is a type for every installation — for hotels, apartments, clubs, residences, public buildings, etc.

GERSTEIN & COOPER

1-3 West Third St. South Boston, Mass.

Gerstein & Cooper Co., Baltimore, Md.; G. Mason Price, Montreal, P. Q.; E. N. Cokefair, Inc., New York, N. Y.; Troop Water Heater Co., Pittsburgh, Pa.; Strong, Carlisle & Hammond Co., Cleveland, Ohio

. . THE . . TRADEMARK that identifies the BEST

Baltimore City Master Plumbers Hold Annual Outing

The annual outing of the Master Plumbers Association of Baltimore City was held in August at Swan Point, Maryland. A large crowd of the members and families and other representatives of the industry spent an enjoyable day participating in boating, bathing and many amusements.

Barbecue luncheon was served throughout the day, and although the morning was marred by a heavy rain, it was one of the most successful social affairs held by the Association. The plumbing inspection force of the health department headed by George J. Fitch, chief inspector, and Doctor J. Frederick Hempel, assistant commissioner of health of Baltimore, were in attendance.

An interesting baseball game was played in the afternoon, and the team headed by William Pritzker defeated Reuben Braudes' lineup by a score of 7 to 6. The feature of the game was the hitting of Charles Wachsmuth of the winning team, who made three home runs.

In the bridge contest for ladies, Mrs. Joseph Horwitz received the highest score.

Throughout the day vocal selections were rendered by Harry Elgin.

The committee who arranged the affair were: Max Kloze, chairman; Joseph Walpert, B. M. Wolf, Hyman Shindel, Isaac Roll, Louis Adler, Reuben Braudes and Alex. Walpert.

Milwaukee Master Plumbers and Salesmen Entertained at Okauchee Lake

Charles Voelz, a plumbing contractor of Milwaukee, Wis., recently entertained a group of members at a joint meeting of the Milwaukee West Side and North Side Pleasure Club, and also a number of sales representatives of supply houses and manufacturers, at his summer home on Okauchee Lake.

In the baseball game which was the feature of the day the master plumbers defeated the salesmen by a score of 21 to 20, with John Savadil pitching for the plumbers and H. Luedke for the salesmen.

Peninsula Merchant Plumbers' Second Annual Outing

The Peninsula Merchant Plumbers Association of California held its second annual outing recently at Charles Merritt's summer home at Felton Acres in the Santa Cruz Mountains, with a good attendance.

All the picnickers had a most enjoyable time.

Vancouver Sanitary and Heating Engineers Elect Officers

The Association of Sanitary and Heating Engineers of Vancouver, B. C., Canada, recently elected the following officers for the ensuing year: President, Frank Morgan of San-O-Heat, Ltd.; vice president, David Ross of David Ross & Co.; secretary-treasurer and manager, Major R. Hargraves, and honorary auditor, E. Peters of Leek & Co., Ltd. Mr. Morgan was also appointed representative on the Vancouver plumbing examining board.

ARMSTRONG BROS.

You can learn a lot from your worn out pipe tools

It's just learning from experience when you study your worn-out pipe tools. There's no better way to know what to look for when buying. It was by wearing out the best available pipe tools that ARMSTRONG BROS. found where and how to improve them—how to make the "Better Pipe Tools."

Look over your discarded tools and when you've discovered where and how each one failed, check these points on the corresponding ARMSTRONG BROS. Pipe Tool (the tools marked with the Arm-and-Hammer). You will find points of strain strengthened, points of wear forged, hardened or of special steels. You will find practicable design improvements and a balance and handiness that makes work easier.

IMPROVED:

Solid Stocks and Dies
Adjustable Stocks and Dies
Ratchet and Triplex Stocks
Pipe Cutters, 3 Types
Knife Blade Cutter Wheels
Standard, Open Side, Heavy Duty and Chain Vises
All-steel and Chain Wrenches

Write for Catalog P-10

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Ave., CHICAGO, U. S. A

WOLVERINE BRASS

Dependable

COMPARE! Compare Wolverine Brass Goods of *today* with the same goods of 1929! You'll find them even better. You'll find many improvements. You'll find even greater values. And you'll find, as always, the same high quality of materials—painstaking care and accuracy in machining—fine finish.

As ever, Wolverine Brass Goods remain completely dependable. As ever, Wolverine keeps faith with the plumbing trade.

WOLVERINE BRASS WORKS
GRAND RAPIDS, MICHIGAN
We Sell the Retail Plumbing Trade

WOLVERINE

MADE FOR LONG RUGGED SERVICE

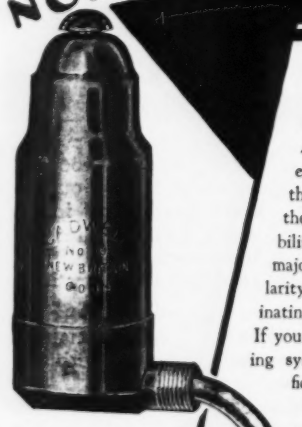
Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.

Tempered Steel

The Worcester line is complete.
Catalog gladly sent upon request.

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS.

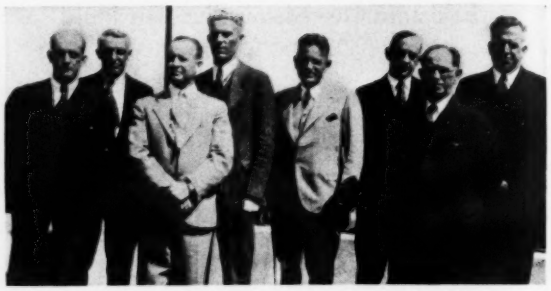
CADWELL
NO. 10 AIR VALVES



THE quick action of CADWELL No. 10 Air Valves in preventing the escape of steam and allowing the exhaustion of air from the radiator and the dependability of this action, are the major reasons for their popularity with the most discriminating of heating contractors. If you are finding some heating system particularly difficult, due to the non-heating of radiators, try CADWELL No. 10 Air Valves.

Get them from your jobber.

The BEATON & CADWELL MFG. CO.
Established 1894
NEW BRITAIN, CONN.



Past President J. V. Young of San Francisco; Treasurer J. B. Hawley of Sacramento; Vice President R. W. Timmons of Richmond; President J. D. Speer of Santa Barbara; Board Member W. H. Picard of Oakland; Past President Harry G. Newman of Oakland; Alex. Coleman of San Francisco, past secretary of the N. A. M. P., and Past President L. J. Kruse of Berkeley. Taken at meeting of officers and northern California board members of the California State Association

Northern California Board Members Meet in Oakland

A keen interest in organization affairs was developed at the meeting of the northern California members of the executive board of the Master Plumbers' Association of California, held at Oakland in August. While no action was taken on the resolutions adopted at the convention held in May, the officers and board members present discussed matters relating to the welfare of the state organization.

Those present were: President J. D. Speer of Santa Barbara, Vice President R. W. Timmons of Richmond, Treasurer J. B. Hawley of Sacramento, Past President J. V. Young of San Francisco, and board member W. H. Picard of Oakland. L. J. Kruse of Berkeley and Harry G. Newman of Oakland, both past presidents of the California State Association, as well as Alex. Coleman of San Francisco, past secretary of the National Association of Master Plumbers, attended the meeting as guests.

Milwaukee Plumbers Enjoy Social Gatherings

While the Milwaukee Master Plumbers' Association did not hold meetings through the summer months some enjoyable social gatherings have been held periodically at the cottages or summer homes of various members,

Group of Milwaukee master plumbers at Lake De Noon outing

thus keeping up the good will and co-operative spirit throughout the organization. At one of these, a group of members of the association met at the summer home of Hugo Berndt at Okauchee Lake, Wis., engaging in games, contests, swimming and various other outdoor sports, and climaxing the day with a buffet lunch served on the lawn.

Late in August, another outing was held at the summer home of John Savadil at Lake De Noon, Wis. Peter King, executive secretary of the Milwaukee Master Plumbers' Association, was present with his camera and induced the entire party to "pose" for him. Those present are pictured in the accompanying photograph.

Denver Master Plumbers Attend Opening of New Home

Denver master plumbers and their families attended the formal opening of the summer home of Mr. and Mrs. John Hensler. "Glen Bogie," their summer home, is located on a high knoll in the midst of the Colorado Rockies at Wandcrest Park, forty-three miles southwest of Denver, with one of the most wonderful panoramic views to be had in that part of the country. The Henslers displayed unusual artistic talent in planning

Denver master plumbers on outing in the Rockies

and building their summer home and in its interior and exterior decoration.

After being greeted with a hearty welcome, the guests assembled became just one large family.

Among those present were: Mr. and Mrs. Harvey H. Mellema and daughter Leone, Mr. and Mrs. Fred H. Samson, Mr. and Mrs. Clyde A. Newman, secretary Colorado Master Plumbers' Association; Mr. and Mrs. V. A. Kiser and son Arthur, Mr. and Mrs. Joel P. Brickey, Mr. and Mrs. Frank X. Bordeau, Mr. and Mrs. Edwin B. Clayton, Mr. and Mrs. Clarence R. Cooper, Mr. and Mrs. Robert Demmer, Mr. and Mrs. R. A. Hurley, Mr. and Mrs. Frank H. Hanlin, Mr. and Mrs. Vincent Kandorf and daughter Gertrude; Mr. and Mrs. Guy A. Stocking and twin sons Glen and Gale, Mr. and Mrs. Carl Thurston, Mr. and Mrs. Frank X. Kreidl, Carl Winter, Mr. and Mrs. F. L. Welle and daughters Edith, Louise and Lois, Mr. and Mrs. A. C. Haaker and sons John, Albert and Billie, Mr. and Mrs. B. F. Graff, Mr. and Mrs. John Hensler (hosts), and Mrs. William Hensler.

Low Fuel Costs

Make Satisfied Customers

With coal for fuel, the copper coil of the Multi-Flow Heater absorbs heat faster, gives more rapid circulation and longer service—a substantial saving to the user.

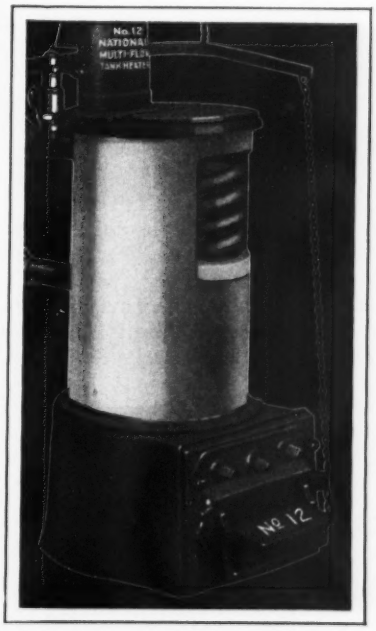
This improved heater delivers piping hot water at 150° 24 hours a day, and is no trouble to operate. With one fueling the Aqua-Matic Regulator maintains a steady fire day and night for two to three days in the average home.

Heater and installation make you a good profit. Made in three sizes. Write for information.

SOLD BY THE LEADING JOBBERS

Note These Features:

- **Check Damper**
- **Turn Damper**
- **Regulator**
- **Pressure Relief Valve**
- **Feeds at Top**
- **Large Copper Coil**
- **Bronze Fittings**
- **Fire Brick Combustion Chamber**
- **Triangular Grates**
- **Lift Draft**
- **Enclosed Base**



150° Hot Water 24 Hours a Day

NATIONAL
MULTI-FLOW TANK HEATER

THE NATIONAL PIPE BENDING CO.
Established 1883
174 River Street, New Haven, Conn.
BOSTON NEW YORK PHILADELPHIA
Instantaneous and Storage Heaters

Two hundred honor J. L. Murphy and wife on return from Europe

Home Coming Dinner in Honor of Mr. and Mrs. J. L. Murphy

Having just returned from an extensive trip to Europe where they visited Ireland, England, France and Germany, Mr. and Mrs. J. L. Murphy of New York City were honored with a homecoming dinner and dance in the main ballroom of the Hotel Roosevelt in New York City on Saturday evening, September 24.

This pleasant affair was attended by approximately 200, including members of the Greater New York Master Plumbers' Associations and their wives and representatives of wholesalers and manufacturers.

Mr. Murphy delivered an exceptionally interesting address about his trip with special reference to plumbing conditions in Europe. He gave it as his opinion that most European countries are at least 35 years behind the United States in the field of modern sanitation.

Following this address, Mrs. Murphy gave a brief talk about her experiences on the trip.

Commissioner Wm. J. Flynn of Bronx acted as toastmaster and introduced the following speakers: Fergus M. McLoughlin, Matthew J. Kennedy, Wm. Wolff, I. J. Brown, Theodore Ahrens, P. R. Mark, F. B. Lasette, Patrick Kenny, Frank Fee, Milton Schnaier, Morris Jarcho, J. J. Crotty, J. M. Chaplain, George Meaney, H. Smith and P. C. Weinseimer.

The arrangements committee consisted of Joseph F. Heck, Morris Jarcho, David Deigan and T. P. McLoughlin.

The reception committee was composed of the following: Joseph F. Heck, H. Halloran and H. Smith of Manhattan branch; George Arnone and Fred Schmalstich of Bronx branch; J. Louis Bosch and Thomas H. Pinnell of Brooklyn branch; Ed. C. Sinker and Walter E. Heap of Richmond branch; John E. Zimmerman and John F. Rogers of Queens branch; Matt. J. Kennedy and John J. Dixon of Greater New York branch.

The dinner was followed by dancing.

Plumbers and Plumbing Inspectors Meet at Palo Alto

Peninsula merchant plumbers and plumbing inspectors recently held a joint meeting with journeyman plumbers of San Mateo and Santa Clara counties at Spearin's Cafe near Palo Alto, Calif. The three groups were well represented, and the result was a successful meeting which gave promise of helpful co-operation. The speakers were Philip Brand, Edward D. Barry, Mr. Volhers and C. Drathman.

The main address was delivered by Mr. Barry, who expressed his appreciation for the great work which has been accomplished by the National Association of Master Plumbers.

Southern Wisconsin Sanitary Club Holds Meeting at University of Wisconsin

Peter King, executive secretary of the Master Plumbers' Association of Milwaukee, Wis., discussed "Plumbers' Ills" at a meeting of the Southern Wisconsin Sanitary Club, held recently at the Hydraulic and Sanitary Laboratory, University of Wisconsin, Madison.

Other speakers on the program, which was under the direction of the University of Wisconsin and the Vocational School, included Professor G. L. Larson, who spoke on "Air Conditioning"; Professor F. M. Dawson, who discussed "Flow of Water Through Small Pipes"; Leon Smith, manager of the Madison Water Works, who talked on "Ground Piping"; and George P. Hambrecht, director of the State Board of Vocational education, who discussed "Vocational Education."

In addition to the speakers, a thorough demonstration of the principles behind the hydraulics of the plumbing system was given by the engineering experts at the sanitary and hydraulic laboratories at the University of Wisconsin. The demonstration gave master plumbers an opportunity to investigate for themselves the various experimental set-ups that were used for the short courses for plumbers given at the University during 1931-32.

A short course for plumbing supervisors and itinerant instructors is planned during the ensuing year, and starting January 1933, a one-week course will also be given for sewage plant operators. Those who will give the demonstration lectures, lead the discussions and conduct the laboratory work during the latter course, include L. F. Warrick, state sanitary engineer; Dr. M. Sarr Nichols, state hygienic laboratory; Professors L. H. Kessler and F. M. Dawson, and Instructor H. E. Ruf, of the department of hydraulics and sanitary engineering of the university.

Death of Thomas F. Hanley, Prominent Contractor

Thomas F. Hanley, president of Hanley & Co. of Chicago, died October 9. He had been in failing health for a number of years, aggravated by an accident some years ago from which he never fully recovered.

As head of one of the largest heating, plumbing and piping contracting firms in the country, Mr. Hanley made himself nationally known. He had installed plumbing and heating equipment for some of the largest building projects all through the middle west during his many years in business.

Notable among his contracts were those for the Buffalo, Jamestown and St. Louis expositions. One of his recent jobs, notable because of its complicated and unique

Thomas F. Hanley

piping was the Shedd aquarium at Chicago, with its requirement of sea and fresh water, and a variety of temperatures.

Mr. Hanley had also made a name for himself in association affairs. He was active in the Chicago organization, serving on many of its committees. In national association work he had also taken a keen interest, ever since he joined it in 1888, recognized by its leaders through his selection to head the national committee on standardization. For six years Mr. Hanley devoted a great deal of time to working out a program of standardization for the industry, culminating at the Portland, Ore., convention in 1925 in his complete report on the results of his six years' work. While the report has not been made operative by the association, his devotion to the subject and his sincerity in working for its solution, won him the National Association's grateful appreciation.

He had entered the business in Kansas City, coming to Chicago where he formed the Hanley-Casey Co. Later when this company dissolved, he organized his present company, Hanley & Co., and brought it to its present position.

He is survived by his widow, one daughter and one son, Thomas Hanley, who succeeds him at the head of his business.

When the Furnace Heat Goes On

Are you waiting for a call, or are you going to suggest to customers and prospects that you drop in, look over the heating system—valves, asbestos pipe coverings, grates, heat regulators, etc., so that there will be all the heat wanted when real cold weather comes?

Circularize them now.

When going over the heating system, recommend Bead Chain for drafts and dampers on boilers and hot air furnaces. It will not jam on pulleys, works smoothly always, is non-corrosive, and the glistening nickel silver balls give smartness to the job.

A reminder, too, will often sell many assemblies of Bead Chain and stopper for replacements on lavatories, tubs, and wash trays.

We have attractive folders on Bead Chain for plumbing uses. How many can you use for your customers and prospects? And with the folders we will also send suggested copy for a letter recommending an inspection of the heating system. Write us on your letterhead.

THE BEAD CHAIN MANUFACTURING CO.
Bridgeport, Conn.

Mfgrs. of Bead Chain for Plumbing, Electric, and other industries.

USE
BEAD CHAIN
FOR PLUMBING

Trade Mark Reg. U.S. Pat. Off.

DAHLQUIST
COPPER

HOT WATER
HEATERS — TANKS — BOILERS

Only in the Dahlquist line of Copper Boilers Automatic Water Heaters and large Commercial Boilers do you get the advantage of economical standardized manufacture, plus the latest patented improvements.

If you are in the market for copper receptacles of any kind, you will find that the name DAHLQUIST stands for the highest quality, finest workmanship and the lowest prices.

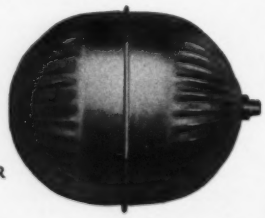
Architects and heating engineers may rely entirely on Dahlquist workmanship and experience, whether for range boilers, automatic storage boilers or heavy pressure boilers.

WRITE FOR OUR PRICES BEFORE YOU ORDER

DAHLQUIST MFG. COMPANY
60 West 3rd Street South Boston, Mass.

THE LEADER

TANK Balls and Tank Floats are necessities which you are supplying from day to day, either at the calls of your customers or upon your visits into their homes. There are a lot of tank balls and a lot of tank floats, but in the matter of *profit to you* there is one tank ball that stands head and shoulders over all others. Write immediately and we will tell you a profit story of importance to you.



THE LEADER

THE REICHERT FLOAT & MFG. CO.
2238 SMEAD AVE., TOLEDO, OHIO

Pipe Sizes—

(Continued from Page 39)

what this drop can be made, it simply is a matter af applying it all the way through the system.

The horizontal mains supplying the risers at the top on a down-feed system must be liberally sized unless the house tank is set at a much higher elevation than usual. It will be seen that to give a gravity head on the highest fixtures of 15 lb., it will be necessary for the water line in the house tank to be nearly 40 ft. higher and with line loss considered this becomes about 45 ft. Such heights are not often practical and, as a result, the pressure on the highest fixtures either is reduced to 7 lb. flush tank water closets are substituted, or a separate cold and hot water supply is installed with a small pneumatic tank to give the increase in pressure necessary. The chief objection to the pneumatic tank idea is that a separate hot water heater is involved and that this heater must be located either sufficiently below the highest fixtures to obtain a gravity circulation, or it must be provided with a circulating pump in order to rotate the hot water for the top floor level.

DOWN-FEED SYSTEM

The most common solution is to place the house tank as high as the structural and architectural conditions will permit and then to use very liberally sized lines between the house tank and the upper fixtures say for the two top stories below which the riser sizes may be reduced to those indicated in Fig. 4 and Table II. Where the house tank is only one story above the top fixtures, flush tank water closets must be used and the drop in the entire run from the house tank down to the farthest fixture should not exceed 1 lb.; if it can be made any less, so much the better. This means that if the total equivalent run to the farthest top fixtures supplied is 300 ft., the drop per 100 ft. should not exceed 1 lb. $\times$ 100/300, or 0.33 lb. per 100 ft. The friction curves shown in Fig. 3, will be useful in quickly picking out the proper size of pipe to give any desired drop in pounds per 100 ft. of equivalent run.

Suppose an installation has a house tank in which the water line is 20 ft. above the level of the top fixtures to be supplied and that the length of run to the farthest fixtures on this level is 400 ft., with the pipe fittings adding another 200 ft., making the equivalent length of run 600 ft. What would be the size of the main coming out of the tank where a maximum flow rate of 400 g.p.m. may be expected; of the horizontal main where a maximum flow rate of 200 g.p.m., may be expected and of the riser down to the fixture level where the maximum flow rate is approximately 100 g.p.m.?

Here the level of the water in the house tank is 20 ft. above the faucet of the highest fixture and the gravity pressure will be

0.43 lb. $\times$ 20 ft., or 8.6 lb.

and, if a total pressure drop of 1 lb. is assumed, the pressure on the farthest fixture under times of peak load will be

8.6 lb.—1 lb. or 7.6 lb.,

TABLE II

Schedule of Sizes For Any Down Feed Riser

Portion of Riser	Maximum Probable Flow at Rate of Gallons per Minute																
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150	200	250
T	¾	1	1¼	1¼	1½	1½	2	2	2½	2½	2½	2½	2½	3	3	3½	3½
S	¾	¾	1	1	1	1¼	1¼	1½	1½	1½	2	2	2	2	2½	2½	2½
R	¾	¾	¾	1	1	1	1¼	1½	1½	1½	2	2	2	2	2	2½	2½
Q	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
P	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
O	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
N	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
M	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
L	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
K	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
J	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
I	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
H	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
G	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
F	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
E	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
D	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
C	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
B	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½
A	¾	¾	¾	1	1	1	1¼	1½	1½	1½	1½	2	2	2	2	2½	2½

while the drop per 100 ft. of equivalent run will have to be

$$1 \text{ lb.} \times 100/600 \text{ or } 0.16\ 2/3 \text{ lb.}$$

Referring to the chart shown in Fig. 3 it will be seen that where the flow through the main is 400 g.p.m., an 8 in. pipe would be required, that where the flow is reduced down to 200 g.p.m., a 6 in. pipe would do, and that where the flow gets down to 100 g.p.m., in the riser branch and riser a 5 in. size would be correct; of course these are rather heavy flows and the head from the tank is small so that excessively large sizes are to be expected. The riser would have to be carried 5 in., down to the branch to the top floor, then reduce to 4 in., for the branch to the floor below the top, and below this could follow the sizes in Table II.

Had the tank been set 10 ft., higher the head avail-

DEPENDABLE WATER SERVICE

For Centralized Schools, Rural Churches, Public and Private Institutions, Dairies, Creameries, Etc.

Running water at the turn of faucet for drinking, for showers and bath, for sanitary purposes, for fire protection and for other uses is in evidence when you visit centralized schools, public and private buildings and institutions beyond the range of city water mains.

Myers Self-Oiling Power Pumps and Water Systems are playing an important part in this forward movement. Automatically controlled, self-lubricated and built to the standards of the finest automobile, they are dependable, care-free and long-lived. With styles and sizes in capacities from 150 to 10,000 gallons of water per hour, they provide economical water service for a wide range of requirements.

If you are looking for profitable year-through business, write or wire us for catalog and complete information.

THE F. E. MYERS & BRO. CO.

ASHLAND OHIO

PROFIT OR LOSS?

Take Your Choice

There is always someone who can sell *cheap* merchandise for less money—but they don't keep the business. High grade goods insure a legitimate profit; protect your business and retain your customers' good will and confidence ..... a few good reasons for installing

PENNSYLVANIA RANGE BOILERS

Sold Thru Jobbers

Complete line of *All Welded* and *Riveted and Welded* Galvanized Boilers, Tanks and Heaters.

JOBBERS: Send for sample of any boiler for 30 day inspection.

Pennsylvania Range Boiler Company
Established 1895
24th and Washington Ave. Philadelphia, Penna.

BURKS SUPER-TURBINE PUMPS

CONDENSATION RETURN UNITS

SERIES 4700

A truly *super pump* on hot water service. No pistons to leak and require repacking. One moving part—the impeller—develops delivery pressures up to 100 pounds per square inch.

Returns condensate to heating boilers *promptly, surely, and safely.* Powerful suction lift and air-handling ability prevents steam-binding. A pump that will carry that boiler safely through when *your back is turned!*

It's an all-bronze raceway and impeller pump with stainless steel shaft mounted in over-size ball bearings. In short, it's a *genuine Burks Super Turbine!*

Send for Condensation Return Bulletin No. 95

DECATUR PUMP COMPANY DECATUR, ILLINOIS

able to be used up in friction but still giving the same pressure at the top fixtures would have been 0.43 lb. x 10 ft., or 4.3 lb. greater and this—with the 1 lb. drop used previously would give a total allowable drop of

1 lb., plus 4.3 lb. or 5.3 lb., total

which, divided into the 600 ft. equivalent run gives a drop per 100 ft. of

5.3 lb. × 100/600 or 0.9 lb.

and, with this drop, the sizes from the chart, Fig. 3,

TABLE III

Approximate Allowance For Fittings, Valves, Etc., in Feet of Straight Pipe

Size of Pipe In.	90° Ell	Type of Fitting or Valve				
		45° Ell	Return Bend	Gate V.	Globe V.	Angle V.
½	4	3	8	2	48	8
¾	5	3	10	3	60	10
1	5	3	10	3	60	10
1¼	6	4	12	3	72	12
1½	7	5	14	4	84	14
2	7	5	14	4	84	14
2½	10	7	20	5	120	20
3	12	8	24	6	144	24
4	18	13	36	9	216	36
5	25	18	50	13	300	50
6	30	21	60	15	360	60

Note.—There is considerable variation between various authorities in the number of feet to allow for the various fittings and valves given above, and the table shown is a composite and consistent summary of what seems to be a fair average of the tests made. In the case of a tee, where the flow is through the run of the fitting, the friction is usually neglected and, where it is out of the branch or the water makes a right angle turn, the loss is taken the same as a 90-deg. ell. This is probably close enough for all practical purposes, although tests indicate that this friction is variable depending on the quantity of water diverted.

show 6 in., 4 in., and 4 in., respectively while if the run is reduced to 200 ft., instead of 600 ft., the allowable drop will go up to

5.3 lb. × 100/200 or 2.7 lb., per 100 ft.

This gives 5 in., 4 in., and 3 in., respectively for the flows of 400, 200 and 100 g.p.m.

From this it is evident that, while the down feed system possesses certain economies in size for the riser portion it is quite likely to involve large distribution main sizes especially when the tank is not elevated to a considerable degree.

Plumbing and Heating Contracts on University Hospital Awarded

Contracts aggregating more than $60,000 for plumbing, heating and ventilating equipment have been let in connection with the addition to the University of California hospital on Parnassus avenue, San Francisco, Calif. The Scott Company was awarded the plumbing contract at $36,937, while the heating and ventilating work went to the Alto Electric Engineering Company at its bid of $24,700. The new unit will measure 237x50 ft. and will be a seven-story structure. To insure quiet for the rest of the hospital, the framework of the addition will be entirely welded instead of riveted.

NEW TRADE LITERATURE

Folder on Copper Plumbing

Hays Manufacturing Co. of Erie, Pa., has issued a folder illustrating and describing its double seal connection and its bender for use in connection with the installation of copper plumbing.

Broadside of New Limit Controls

Minneapolis-Honeywell Regulator Co. of Minneapolis, Minn., has just issued an attractive broadside, 19x25 in., printed in three colors, red, green and black, illustrating and describing this company's line of limit controls for steam, hot water, vapor and warm air heating systems.

Circulars About Gas Burners

Schwan Burner Company of Dallas, Texas, has issued three circulars, two of them illustrating and describing its line of gas burners, and the third giving a partial list of office buildings, churches, hotels, hospitals, schools and residences in which this concern's gas burners have been installed.

Folder About the Welding of Wrought Iron

A. M. Byers Company of Pittsburgh, Pa., has published a four-page folder, "The Welding of Genuine Wrought Iron," which contains some practical information on the proper procedure for welding wrought iron. Engineering data on the other properties and characteristics of wrought iron are also given in this folder.

Chromium Steel Tubes and Pipe

The Babcock & Wilcox Tube Co. of Beaver Falls, Pa., has issued a 16-page bulletin, 8½ x 11 in. in size, describing in detail its 4 to 6 per cent chromium steel seamless tubes and pipe developed for service where the destruction of equipment by the action of sulphur compounds on steel at high temperatures represents a serious loss.

Circular About Incinerators for Small Homes

The Kerner Incinerator Company of Milwaukee, Wis., has just announced the addition of a new model to its line of incinerators. This new model is designed for installation in small homes and modest dwellings. The circular making this announcement brings also several installation drawings with roughing-in measurements.

Pamphlet About Flexible Metal Hose

The Atlantic Metal Hose Co. of New York City has issued an eight-page pamphlet, illustrating and describing in detail its line of flexible metal hose for all engineering, mechanical and technical purposes. The pamphlet stresses its use as a flexible conveyor of cutting compounds, oils, live steam, alcohol, acids, air under pressure, exhaust and vacuum.

Pamphlet on Heating for Large Buildings

American Radiator Company of New York City has published a twelve-page pamphlet under the title of "Ideal Heating for Large Buildings," in which some of its new boilers and radiators are illustrated and described, including a new concealed radiator. Attention is also called to the importance of good heating accessories, such as radiator valves, air valves, vent valves, regulators and controls.

Announcing a New Arc Welder

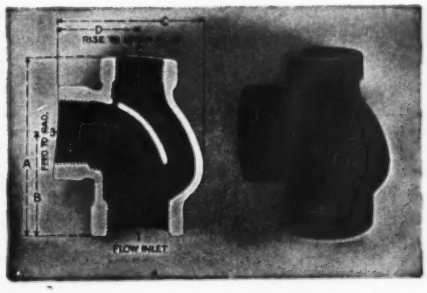
The Lincoln Electric Company of Cleveland, Ohio, has issued an eight-page bulletin, 8½ x 11 in., announcing a new arc welder, in which all the shielded arc controls are enclosed in a safety control cabinet with no live contacts exposed, located on top of the welder at a handy height.

BLAKE WATER HEATERS

K-1320 K-1325 K-1330 K-1335 Cross Section

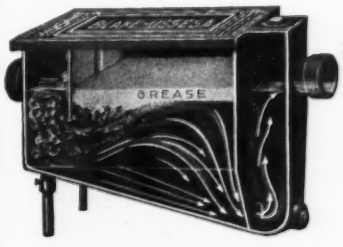
Now is the season for installing and replacing water heaters. Blake heaters are made of iron or brass for use with 30 or 40 gallon range boilers. Will fit any type furnace or boiler. One foot of heating surface carries 35 feet of radiation with maximum efficiency. Cleanout plugs at bottom. Tapped for either ¾ or 1-inch rim pipe. Here is a profitable item for you. See Blake catalog for prices, etc. Sold by jobbers.

BLAKE DISTRIBUTOR FITTINGS



A saving for you and satisfaction for your customer with Blake O/S Distributor Fittings. These successful fittings save labor, extra fittings and joints. They eliminate entirely the use of ordinary elbows, tees and nipples, and make it easy to keep risers in line. Perfect circulation and uniform distribution of hot water to all radiators. Made in cast iron, galvanized or brass. See Blake catalog for additional information. Sold by jobbers.

BLAKE GREASE TRAPS



Fifteen years ago the Blake Ussessa Grease Trap was first introduced to the trade. Numerous tests have proven this trap to be exceptionally efficient as demonstrated in one instance where it achieved the amazing figure of 99.9% grease removal without the use of a water jacket. Today thousands are in use throughout the United States in hotels, restaurants, oil refineries and packing plants. Made in sizes from 45 gal. to 15,000 gal. per hour. You will be pleasantly surprised at the low price, considering the almost perfect efficiency of this outstanding grease trap. Sold by jobbers.

"MAKE NO MISTAKE—USE THE TESTED BLAKE"

BLAKE SPECIALTY COMPANY
ROCK ISLAND • ILLINOIS

WARNOCK

TRIPLE WEAR WRENCH

WHY scratch or crush finished pipe?

Ask your dealer for a genuine Warnock.

Strong, flexible straps that will not mar the finest finish.

WARNOCK MFG. CO.

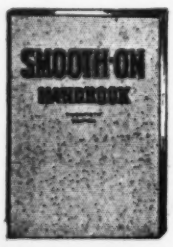
WORCESTER, MASS.

GOOD THREADS *are worthy of a good joint filler*

SMOOTH-ON No.3

THREADED or flanged joints made with Smooth-On No. 3 can be taken apart at will, but in service *must* stay tight. The metal filling once spread perfectly over the thread surfaces and set, cannot dry, shrivel or blow out under vibration, high pressure and wide temperature range, because it then acts in unison with the pipe metal itself—and has the same expansion coefficient.

If you want perfect joint performance, read the Smooth-On Handbook, and give Smooth-On No. 3 a trial.



Get Smooth-On No. 3 in 1 or 5-lb. can or 25-lb. keg from your supply house or if necessary, direct from us.

SMOOTH-ON MFG. CO., Dept. 12
570 Communipaw Ave., Jersey City, N. J.

Do it with SMOOTH-ON

This location not only gives the meter and the control setting great visibility but also provides easy access for operation of the control.

Bulletin on Equalizing Valves

Gorton Heating Corporation of Cranford, N. J., has issued its bulletin, No. 97, illustrating and describing its equalizing valve, which is designed to equalize steam heating systems where a thermostat is used to operate an oil burner, automatic stoker or gas-fired boiler, so that all radiators will heat up evenly and quickly and all rooms will be heated when the thermostat shuts off the fire. This bulletin also calls attention to this company's air eliminator which is designed for quick venting of steam mains.

Broadside on Gravity Drainage Systems

Norman Boosey Manufacturing Co. of Detroit, Mich., has issued a broadside, 16 x 25 in. in size, illustrating and describing some of its drainage specialties, such as an automatic and manually operated drainage control valve, a cast iron adjustable catch basin with automatic, accessible back pressure valve, and a cast iron, deep seal floor drain with bronze back pressure valve. The broadside brings also two diagrams, one of gravity drainage, combining the stormwater and the sanitary system, and the other of gravity drainage, separating the stormwater and sanitary system.

Folders on Oil-Burning Equipment

York Oil Burner Co., Inc., of York, Pa., have just published two folders, one illustrating and describing its oil burning boiler, and the other its automatic shut-off valve. The boiler is described as being substantial in construction, made of the best steel welded into one balanced piece, with heavy cast iron base. The boiler should last up to 75 years, and the remainder of the oil burning unit with reasonable repairs should give satisfactory performance for twenty-five years or more. The automatic shut-off valve is made in sizes from ¼ in. to 6 in., and it stops automatically the flow of oil in case of breakage of pipe or fitting, or of the overfeeding of oil at the burners.

"Selling Automatic Heat to the Home"

"Selling Automatic Heat to the Home," is the title of an attractive 30-page book, size 8½ x 11 in., which has just been published by the Auto-Home Stoker Corporation, 1730 South Michigan avenue, Chicago. Besides announcing a new stoker for the home, it also contains interesting and informative treatises on the following subjects: 1. The Stoker Industry Today.—2. Brief History of Stoker Development.—3. Competition from Oil and Gas.—4. Selling Points of the Home Stoker.—5. Potential Markets for Home Stokers.—Valuable pointers are also given about merchandising, sales promotion and effective literature. The book is printed on high-grade paper in three colors and is well illustrated. It is enclosed in an exceptionally fine cover in four colors, that is bound to attract attention.

Catalog of Small Tools

The Greenfield Tap and Die Corporation of Greenfield, Mass., has issued its catalog No. 32 under the title of "Small Tools," in the form of a book of 384 pages, 5 x 7¼ in. in size. This catalog is divided into twelve sections as follows: 1. Taps.—2. Dies.—3. Drills.—4. Screw Extractors.—5. Reamers.—6. Gages.—7. Screw Plates.—8. Pipe Tools.—9. Miscellaneous Tools.—10. Machine Tools.—11. Tables and other Useful Information.—12. Numerical Index and New Tools. The catalog has been compiled with great care and both the paper and the illustrations are high grade; the printing and the binding of the book have also been done in a most careful manner. The result of all this is that the book is attractive as well as valuable

for quick reference, and it will therefore prove a desirable addition to the trade library of plumbing and heating contractors.

Catalog of Water Supply Systems and Turbine Pumps

Westco Pump Corporation of Davenport, Iowa, has published a booklet of 16 pages, 8½ x 11 in., containing a treatise on how running water saves the time, money and strength of farm and suburban families, as well as thorough descriptions with illustrations of this company's line of pumps and water supply systems, including turbine pumps, pneumatic tank water systems, gasoline turbine type pumping units, and deep-well turbine pumps. Among the services rendered by these pumps and water systems are the following: Water supply systems on farms, in country homes, municipalities and industrial plants; they are also in use as house pumps, fire pumps, refinery pumps, natural gasoline pumps, hot oil pumps, ice water circulating pumps, brine circulating pumps, condensation return pumps, car washing pumps, tank filling pumps, and irrigation pumps.

Catalog of Drains, Traps and Special Fittings

J. A. Zurn Manufacturing Company of Erie, Pa., has issued a loose-leaf catalog of drains for every surface drainage requirement and of traps and special fittings, including drains for shower stalls and rooms, floors and areaways, roof drains, promenade deck drains, gutter and balcony drains, gutter and cornice drains, expansion joints for roof drains, extra heavy floor drains with supplementary strainers, hinge top floor or area drain, gutter drains with flashing provision, floor drains with and without back pressure device, extra heavy floor drain and trap combined with removable sediment bucket, extra heavy floor drain with mud bucket and hinge strainer, flushing rim drains for hospital floors, swimming pool gutter drains, swimming pool inlet, outlet or overflow drain, special drainage P traps for use with any drain, pipe adapters and grease interceptors. The catalog consists of 54 pages, 8¾ x 11½ in. in size.

Combustion—A Book of Reference

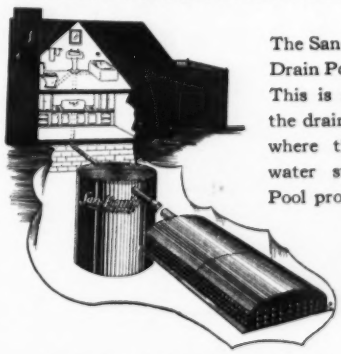
American Gas Association of New York City has published the third edition of "Combustion—A Reference Book on Theory and Practice." Although this book bears the same title as the two former editions, it is in fact entirely new from cover to cover, both in content and treatment, because it has been rewritten and brought up to date, owing to the fact that during the last few years a great development has taken place in the industrial gas field both in practice and in knowledge of fundamental theory. The market for gas as a fuel has broadened to such an extent that its competitive influence has become manifest. A substantial portion of this book deals with this point, and it also gives the methods by which fuel consumption and fuel costs can be calculated. The book is divided into twelve chapters and their headings will give the reader a clear idea of its scope. They are as follows: 1. Heat and Its Measurements.—2. Gas Volume and Pressure.—3. Chemistry of Combustion.—4. Thermal Capacity.—5. Heat Transfer.—6. Combustion Data of Commercial Gases.—7. Atmospheric Burners.—8. Industrial Combustion Equipment.—9. Temperature Control.—10. Heat Salvage Methods.—11. Gas Analysis.—12. Fuel Comparisons.—Following each chapter is a bibliography of the more important books on the subject. These references constitute a fertile background for those who wish to study in greater detail the subject outlined in the text. Fifty-eight charts and 114 tables with much valuable information accompany the text. The book consists of 208 pages, 9 x 12 in. in size.

For the . . .
Unsewered Job
A COMPLETE
DISPOSAL SYSTEM

Without complete sewage disposal an unsewered plumbing job cannot be a success. The rest of the plumbing becomes useless. Sell a complete sewage disposal system—both tank and drainage—and you profit these three ways:

1. *Increased profits from both tank and drainage field.*
2. *Easier to sell quality fixtures throughout the entire job.*
3. *Good will that brings you new customers.*

You can recommend San-Equip Systems with confidence. San-Equip is the largest producer of septic tanks. San-Equip is the only nationally advertised, trade-marked system. San-Equip supplies an adequate field service to help you with your problems. And San-Equip has been approved by leading health officers everywhere. In fact, San-Equip's leadership in this field is so firmly established that over 50% of the sewage disposal systems installed by leading plumbers in the United States bear the San-Equip Trade Mark.



The San-Equip Septic Tank and Drain Pool System is illustrated. This is an ideal system where the drainage area is limited and where there is no danger of water supply pollution. The Pool provides necessary storage capacity and drainage area, is easily installed, and saves labor and materials.

★ A Certificate of Approved Equipment backed by the largest manufacturers of home disposal systems accompanies every San-Equip System as a permanent record of the Installation.

Write for Complete Facts to

San-Equip, Inc., 720 E. Brighton Ave.
Syracuse, N. Y.

San-Equip
★ Certified
SEWAGE DISPOSAL

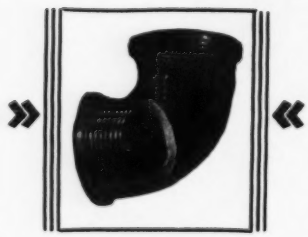
Threads, while occupying but a small part of each length of pipe, play a very important part in installation. If they fit easily, the job moves ahead rapidly—if trouble results from faulty threads, time is lost and someone loses money. For this reason, the threads on Fretz-Moon Pipe are cut deep, sharp, clean and true—they fit faster and save money.

Use Fretz-Moon Pipe for your next steel pipe job, and note the difference.

FRETZ-MOON TUBE COMPANY, INC. • BUTLER, PENNA.

FRETZ-MOON
PIPE
BLACK AND GALVANIZED

PIPE FITTINGS



Clean threadways—Tapping to gauge—Absence of sand holes—all go to distinguish—IMICO—Fittings.

A full line in malleable iron, cast iron and brass.

Also manufacturers of brass and iron valves.

ILLINOIS MALLEABLE IRON CO.
Chicago, Ill.
MANUFACTURERS OF BRASS AND IRON VALVES

NEW CONTRACTORS & INCORPORATIONS

Des Moines, Iowa—F. G. Allward has opened a plumbing business at 3714 Ingersoll avenue.

Columbus, Neb.—Joseph and T. F. Kelly have opened a plumbing business at 271 Thirteenth street.

Tenino, Wash.—E. M. Jurin has opened a plumbing and heating business in the Gallea Garage building.

Camden, N. J.—Alvah S. Ward has opened a plumbing and heating business at 118 South 27th street.

Madison, Wis.—F. L. Badeau has opened a plumbing and heating business on Monona drive in this city.

Los Angeles, Calif.—The California Plumbing & Heating Co. has engaged in business at 4107 Beverly boulevard.

Los Angeles, Calif.—The Aalco Plumbing Co. has started in business at 735 East 93rd street, under the management of Byron L. Duvelle.

Seattle, Wash.—The Ace Plumbing & Heating Co. has started in business at 2632 California avenue, under the management of R. E. Huntoon.

Seattle, Wash.—M. B. Kennedy and A. E. Bortner have formed a partnership and have opened a plumbing and heating business at 1813 Broadway.

Los Angeles, Calif.—The California Plumbing Co. has opened a plumbing and heating business at 2321 West View street, under the management of Joseph Ives.

Venice, Calif.—The Community Plumbing Service has started in business at 1221 Washington boulevard. The proprietors are Manuel Duron and William V. Hemsley.

Ashland, Ky.—The Tri State Plumbing & Heating Co. has been incorporated with a capital of $3,000. The incorporators are: H. S. Howes, H. M. Lewis and L. Arthur Griffith.

Philadelphia, Pa.—Charles Osterman and M. B. Rambo have formed a partnership and have just opened a plumbing and heating business at 2450 Frankford avenue in this city.

Los Angeles, Calif.—The H. Ernest Ashton Plumbing Co. has opened a plumbing and heating business at 1310 South Hobart boulevard, under the management of John William Ashton.

Bismarck, N. Dak.—L. N. Belden and A. Doderquist have formed a partnership under the name of the Bismarck Plumbing & Heating Co., and have engaged in business at 806 First street.

Los Angeles, Calif.—The Westlake Hardware & Plumbing Co. has opened a plumbing, heating and hardware business at 688 South Alvarado street, under the management of James M. Herzikoff.

New York, N. Y.—The Sanitary Utility Company has been organized and incorporated, with a capital of $5,000, to establish and operate a plumbing business. B. Katzen, 29 Broadway, represents the new firm.

Norfolk, Nebr.—William G. Volkman has opened a plumbing and heating business at 207 South Third street. Mr. Volkman has been connected with the E. A. Seiffert Plumbing Co. in this city about ten years.

New York, N. Y.—Walter J. Ryan, Inc., has been chartered by Walter J. Ryan and associates to establish and operate a plumbing contracting business. J. C. Victor, 245 Broadway, represents the new concern.

Baldwin, N. Y.—James Harper, Inc., has been chartered

with a capital of $5,000, to establish and operate a plumbing and heating contracting business. The law firm of Koslow & Mack, Jamaica, N. Y., represents the new concern.

New York, N. Y.—With a capital of $5,000, the firm of Joe Choyke, Inc., has been chartered, to establish and operate a plumbing engineering and contracting business. The new concern is represented by W. Rosenberg, 1860 Broadway.

Passaic, N. J.—Abe Rachles and Company, Inc., has been chartered, with a capital of 1,000 shares common stock, to engage in the plumbing and heating contracting business. The new firm is represented by Philip H. Saxe, local attorney.

New York, N. Y.—The D. and D. Plumbing and Heating Corporation has been incorporated, with a capital of $20,000, to establish and operate a plumbing and heating contracting business in Queens. C. G. De Loca, 176 Broadway, represents the new concern.

New York, N. Y.—The Morey Company has been organized and incorporated, with a capital of $5,000, to establish and operate a plumbing and heating contracting business in the Bronx. The new company is represented by S. Alacchi, 355 East 149th street.

New York, N. Y.—The New Era Plumbing and Heating Corporation has been incorporated, with a capital of 200 shares of no par common stock, to establish and operate a plumbing and heating contracting business. The new company is represented by J. Schlossberg, 521 Fifth avenue.

Brooklyn, N. Y.—The Loumor Plumbing and Heating Company has been organized and incorporated, with a capital of 150 shares of no par common stock, to establish and operate a plumbing and heating engineering and contracting business. C. B. Sanders, 36 West Forty-fourth street, New York City, represents the new concern.

Boston, Mass.—Arthur A. Klonower, formerly manager of the heating department, and Matthias J. Flaherty, formerly superintendent of construction for J. S. Cassedy, Inc., have organized the Klonower-Flaherty & Co. and have started in business at 342 Newberry street as engineers and contractors to design and install heating, ventilation, air conditioning, power and process piping systems.

BUSINESS CHANGES

San Francisco, Calif.—The Empire Heating Co. has moved its business from 580 Market street to 3124 Geary street.

Berkeley, Calif.—The Jevons Plumbing Co. has moved its business from 2330 Shattuck avenue to 1484 University avenue.

Fargo, N. Dak.—Guyer Bros. have moved their plumbing and heating business into their new building at 912 Third avenue, North.

Fremont, Nebr.—Wood B. Hatcher has moved his plumbing and heating business from 86 West Fifth street to the corner of Fifth and H street, where he has an elaborate window display.

Youngstown, Ohio.—The plumbing and heating firm of Moss & Schmutz has been dissolved, and the partners have opened separate shops. J. C. Moss is located at 21 North Champion street, and A. A. Schmutz's establishment is located at 18 East Front street.

The above slide can be adjusted to fit tray or sink by loosening bolt shown by arrow.
Thread three inches long so the Leg can be made the height wanted.

REDLON
SINK AND TRAY LEG

Here is a self-contained sink and tray leg that is adjustable all ways. They will cut installation time in half and the amount of trouble they save you in ordering alone, will well repay you for trying them. Simply state whether they are to be used for sink or tray.

Also write us for detailed information regarding the complete Redlon line which consists also of adjustable roof flanges, adjustable boiler stands, adjustable tub traps and closet fittings.

Territories available for Manufacturers Representatives

O. M. REDLON
COR. FRONT & FERRY STS. BATH, ME.

The name "ACME" is stamped on every washer

"ACME" *Handipak*

[*"ACME'S" come in seven different sizes, 100 to the can. If your need is assorted sizes, specify the HANDIPAK in which is packed 100 washers in assorted sizes*]

Not "just another bibb washer" but one designed to do everything you've ever wanted a bibb washer to do. The ACME is made of of an exceptionally tough black rubber compound. Resists extremely hot or cold water. Overcomes rapping or chattering of faucets; allow full waterway; make perfect seat, made in beveled type, seven sizes.

» *Your jobber can serve you* «

LAVELLE RUBBER CO.
320 W. Illinois St. Chicago, Ill.

WHAT WOMEN ARE DOING

BY DOROTHY EDWARDS

Queens Borough Auxiliary Is Busy

The Women's Auxiliary to the Queens Borough, N. Y., Master Plumbers' Association held an outing on September 24, to which the men were invited. The outing was held at the Naragansett Inn, Lindenhurst, Long Island.

While this organization is still in its infancy, the ladies have been meeting throughout the summer for the sole purpose of getting better acquainted over the "tea cups," "ice cream sandwiches," and cards. Last spring the first card party was a tremendous success. The next card party and bunco is to be held in October. Mrs. Charles R. Budrie was appointed chairman of arrangements in appreciation of her fruitful efforts in connection with the previous party.

Germantown Women's Auxiliary Active

The Germantown, Pa., Women's Auxiliary has been quite active during the summer months with parties in both July and August. The July gathering was in the form of a card and radio party at Mrs. Chas. B. Magee's home. Prizes were awarded and later refreshments were served. The August party consisted of five members spending a pleasant day at the summer cottage of Mrs. David Stevens, president of the auxiliary. The first meeting of the fall season was held October 4.

Rochester Auxiliary Meets at Members' Homes

The Ladies' Auxiliary of the Associated Master Plumbers of Rochester, N. Y., will have a luncheon and card party Wednesday afternoon, October 14, at the home of Mrs. Harry J. Bareham on North Union Street.

The first meeting of the season was held on September 14 at the home of Mrs. B. Kewin, president. This year it has been decided to hold all meetings, luncheons and card parties at the homes of different members.

South Side Auxiliary Opens Season

The South Side Auxiliary of Chicago met for its first meeting of the season on September 14 at the Wedgewood Hotel with the following hostesses in charge: Mesdames C. D. Harris, Oscar Larson, F. Shaw, and McHugh. Twenty-four members and three guests were present.

After the usual order of business, a card party was announced to be held at the home of Mrs. F. W. Hager in Beverly Hills. The entertainment committee is also planning a dinner party to be held in October.

The ladies were very pleased to welcome Mrs. W. F. Hildeman, as she was unable to attend any meetings last year because of her health. During the meeting Mrs. Hildeman expressed deep appreciation for the various expressions of sympathy received during her illness.

A misfortune befell sixteen of the members at the close of a previous meeting when an overloaded elevator dropped. Mrs. Oscar Larson suffered a fractured knee and Mrs. Hildeman suffered much pain due to the force of the blow. Both ladies were confined to hospitals for some time. However, both are making a satisfactory recovery along with other members who suffered nerve shocks.

The usual enjoyable afternoon at cards followed the business routine, with honors in bridge going to Mesdames Jacobs, Hildeman and Sawyer and the 500 prize to Mrs. Sepicum, a guest of Mrs. Larson.

New Jersey Auxiliary Executive Board to Meet October 26

On Wednesday, October 26, at 3 p. m. the New Jersey State Auxiliary will hold its first executive board meeting of the 1932-33 season at the Masonic Temple, Jersey City, with Mrs. Henry Bunker, Jr., presiding. After the meeting, officers will be the guests of the Jersey City auxiliary at a dinner and theater party, to which all members of the auxiliary and of the Master Plumbers' Association and their friends are invited.

North Shore Auxiliary Entertained

Mrs. Julia McKenna, the "plumber" member of the Women's Auxiliary to the North Shore Plumbing Contractor's Association, entertained this group at her home in Kenilworth, Ill., on September 15. A delicious dessert and coffee were served just before the business meeting. Twelve members were present to enjoy bridge and bunco after the routine of business. Prizes were won by Mrs. Geo. A. Kearney, Mrs. V. J. Killian and Mrs. C. Schmeiser. Mrs. E. R. Norman of Evanston, Ill., will entertain at the next meeting.

September Meeting of the Denver Auxiliary

On September 27 the Denver, Colorado, Ladies' Auxiliary held its regular meeting at the home of Mrs. William Hensler, who served a delicious luncheon. Whist was

The three ladies are: Mrs. J. J. Deasy, Mrs. J. V. Young and Mrs. Victor Petersen, all of San Francisco. The two traffic policemen are Geo. R. Cockerson and C. K. Gill, motorcycle escorts from Oakland to Mount Diablo Country Club, where California Master Plumbers' Association held its recent convention picnic

played after the business meeting. Mrs. C. R. Cooper and Mrs. F. H. Samson took the honors. The hostess prize was received by Mrs. Stocking.

The next meeting will be held on October 12 at the home of Mrs. Frank Kreidl.

Orange Auxiliary Opens Season

The Orange, N. J., Women's Auxiliary met for the first time this season on September 22. Being the first meeting, the attendance was rather small and no business was transacted. However, with the coming of the next meeting, more enthusiasm and co-operation is expected.

Kansas City Auxiliary Opens Fall Season

The first fall meeting of the Women's Auxiliary to the Kansas City, Mo., Master Plumbers Association was held on September 8. A program of the year's work was outlined in a recent letter from Mrs. E. D. Hornbrook, who has been chosen correspondent for this group. A dance and card party is to be held on October 19. Receipts are to be used only for benevolent work. A musical tea in honor of Mrs. J. Preston Perham, national president, will be held on her arrival in Kansas City. The Needlework Guild is to receive $25.00 for underwear and hosiery. In addition, each member will give two new garments. The Student Loan Fund for daughters of the auxiliary members was approved and the name of Miss LaVerne Spaeth was placed on file. The sum of $30 was the first gift to this fund.

Detroit Auxiliary Very Active

At Detroit the women have been very active. On September 8 the first fall meeting was held and it was decided to work for the Needlework Guild. A luncheon and card party was arranged to take place the first week in October. The entrance fee will be articles of baby clothes. In this way the women expect to make a good showing for the Needlework Guild.

Mrs. M. Mesnard, president of the state auxiliary, was present at this meeting. She read a report on the national convention which was interesting and enlightening especially to those who were not able to attend. Many of the younger members of the group learned of the problems overcome by Mrs. E. D. Hornbrook and others in starting and carrying on the auxiliary movement.

A picnic was held during the summer at Belle Isle which was very well attended. Later in the summer a boat ride and basket lunch picnic were enjoyed.

Indianapolis Auxiliary's September Meeting

The September meeting of the Indianapolis, Indiana, Women's Auxiliary was held at the home of Mrs. Charles Trosky, 1413 W. 33rd street. A luncheon is planned for the October meeting, Mrs. Bauer and Mrs. Anderson being appointed to make the arrangements. A social hour followed the meeting at which time bridge and bunco were played. Mrs. Trosky served refreshments.

Mansfield Auxiliary Very Active Socially

The Mansfield, Ohio, Women's Auxiliary was entertained by Mrs. Homer Frye at her home on Thursday, September 29. There were nine members present and three guests, Miss Powell, Mrs. Hollowood of Columbus, O., who were house guests of Mrs. Frye, and her daughter, Mrs. Rhea Rondell. The business meeting was followed by refreshments served by the hostess. Mrs. Alex Grassick invited the ladies to meet at her home on October 27.

TABER SUMP PUMPS IN GENERAL USE

Built for 5 ft. pit. Single and Duplex Units

Fig. 1162-A

Sold with and without tank

The larger Taber Sump and Sewage Pumps are being specified and used on jobs requiring high grade equipment. Following are single unit sizes in general use. . . . 1750 R.P.M. 60 Cycle and Direct Current.

Type	G.P.M.	Head	Outlet,in.	Plate in.	H.P.	Wgt. lbs.
AL-25-2	25	20	1	24	½	272
AL-50-2	50	20	1½	32	¾	350
AL-75-2	75	20	1½	36	1	436
AL-100-2	100	20	2	36	1½	481
AL-150-3	150	20	2½	36	2	607
AL-200-3	200	30	3	36	3	675
AL-300-3	300	30	4	36	5	772

Write for complete Bulletin 88-639

TABER

TABER PUMP CO. *Est. 1859*

Taber Pump Co., 290 Elm St., Buffalo, N.Y.

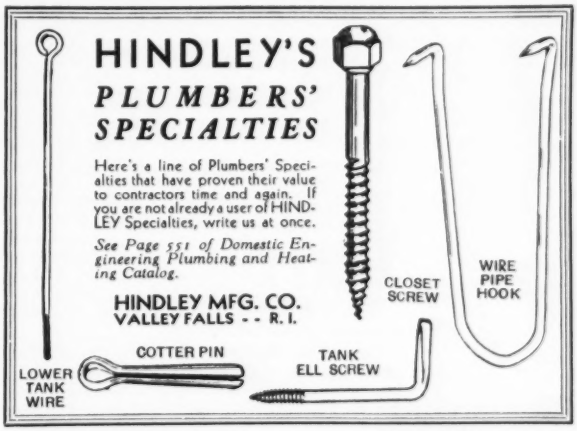
HINDLEY'S

PLUMBERS' SPECIALTIES

Here's a line of Plumbers' Specialties that have proven their value to contractors time and again. If you are not already a user of HINDLEY Specialties, write us at once.

See Page 551 of Domestic Engineering Plumbing and Heating Catalog.

HINDLEY MFG. CO.
VALLEY FALLS - - R. I.



ACHESON BRASS FITTINGS

The Best Brass Fittings that Experience, Modern Machinery, Rigid Inspections and Conscientious Effort Can Produce
Acheson Mfg Co.
TRADE MARK
M
INSIDE EACH FITTING
THE DEPENDABLE LINE
For The Jobber To Handle
And The Plumber To Use

THE "MODERN" RANGE BOILER

30 and 40 Gallons
200, 250 and 300 lb. Test

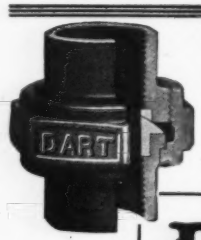
In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.

Make PROFITS on Remodeling
THE KAINER PRESSURE GOVERNOR
Accurate
Simple
Safe
Automatic Control for Hot Water Heating Systems

Write today for prices and Bulletin 32-B
A. S. M. E. Approved
KAINER & COMPANY CHICAGO
761-771 MATHER STREET



"TWO BRONZE TO BRONZE SEATS make DART UNIONS the safe bet that they are for all installations." This construction assures freedom from leaks and corrosion, and makes certain an installation that is "everlasting" as far as installations go. Pipe ends and nut are made of heavy air refined malleable iron. Seats are accurately machined and perfectly ground. In summing it all up, DART UNIONS are made as well as it is possible to make *unions*.
Dart Unions
E. M. DART MANUFACTURING CO.
Providence, Rhode Island
Sales Agents: The Fairbanks Co., New York Branches
Canadian Factory: Dart Union Co., Ltd., Toronto, Can.

New Monel Metal "Straitline"
CABINET SINKS
NOW AVAILABLE
Ask your jobber for details or write direct
Monel Metal is a registered trademark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.
MONEL METAL
A HIGH NICKEL ALLOY
MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER
THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

there's one REAL answer
YAGER'S

YAGER'S Soldering Salts is the answer to any soldering problem. It's no trick at all to do the very best kind of a job with YAGER'S.
Easier—quicker—and once you use YAGER'S you'll stick with it. That's what we think of YAGER'S. We ask you to try a can at our expense. See if we're not right. See Page 638 Domestic Engineering Plumbing & Heating Catalog for further information.
ALEX R. BENSON CO., INC., HUDSON, N. Y.
For list of distributors see 1932 McRae Blue Book
Sales Agents in Canada: Canadian General Electric Co., Ltd., Montreal and Toronto

Several delightful picnic suppers were held during the summer to which the families were invited. The members expect to entertain their husbands and children at a steak fry, Sunday October 16, at the "Devils Punch Bowl."

On September 14 the members of the auxiliary went to Cleveland on a shopping and pleasure trip. There were 10 members and three daughters who drove the cars. The group arrived in Cleveland at 9:30, and shopped until noon when a lovely luncheon was enjoyed. A little more shopping was done and then the group went to a musical comedy. Later the ladies had dinner and started for home at 8:00 o'clock.

Tampa Auxiliary Reports 100 Per Cent Attendance

The Tampa, Fla. Women's Auxiliary met for its monthly meeting at the Plumbers' Club House on October 3 with a 100 per cent attendance. Business included reading of the minutes, treasurer's report and committee reports. Two members served refreshments at the gathering. The next meeting will be held on November 7.

A bridge party at which 24 were present was held recently at the Plumbers' Club House with Mrs. W. E. McAndrew and Mrs. G. B. Shaw in charge. It was a benefit bridge and the results were very good.

The auxiliary is planning a fish fry on October 21. Potatoes, salad, rolls, coffee and dessert will also be served.

It's a Great Life If Your Endurance Is Good!

Another complete short story, from the interesting biography of the wife of one of the men in the trade who, as you will find, is doing much to promote her husband's business. This interesting story tells how this clever business woman helps in her husband's office

The old residence selected, a two-story structure, stood on a terrace about twenty-five feet back from the sidewalk. As a start, we cut away this terrace and in what had been the yard space constructed our showroom at the sidewalk level. This necessitated a rise of seven steps to the offices back of the showroom, but it worked out very effectively, for a broad and inviting center stair was built.

The first room on this balcony level, overlooking the showroom, I took for my office and a very informal reception room combined, close to the showroom and yet detached enough not to interfere with anything going on there. Back of my office was the salesmen's office with its numerous desks, charts, and blackboard. Then came the superintendent's office, and a small room in which the workmen could assemble. On the second floor to the front was provided a large private office and a bookkeeper's office, back of which ranged two store rooms. The shop was established in what had been the garage at the rear of the property, a two-story building, also, which with slight alterations, worked out admirably for its purpose.

I battled with the architect on a number of points which had to do with the display and functioning of our particular line of business with which he was not familiar. It was finally agreed that the front should be of Italian stone so as not to lose its identity among its red brick neighbors, though I realized later that I might have waived that point had I realized how little stonework there would be, after I got the amount of plate glass that I wanted. It was my idea to have the entire showroom serve as a show window, as equipment such as we handle is heavy, hard to move, and difficult to display to advantage in a small window space. To further this effect I asked for every inch of glass possible across the front and that the sills should be as close to the floor as practical, so giving a clear and unobstructed view of the entire showroom. (To be continued)

PIPE LINES CONNECTED BY L·Y·T

THEY ASKED TOO MANY QUESTIONS

A little boy had spent his first day in school. Coming home from his office his father asked him how he liked to go to school. He answered: "Pretty well. Only they ask too many questions. First, they wanted to know where you were born, and I told them. Then they wanted to know where mother was born and I told that. But when they asked me where I was born, I had to tell a lie. I didn't want to say the Women's Hospital, because they would think I am a sissy, so I said 'The Yankee Stadium!' "—Exchange.

TABLECLOTH NEXT

Waitress: "Haven't they given you a menu yet, mister?"

Famished Customer: "Yes, but I finished that half an hour ago."—Border Cities Star.

YUM-YUM

"And what," asked the chief of the Cannibal Islands in his kindest tones, "was your business before you were captured by my men?"

"I was a newspaper man," answered the captive.

"An editor?"

"No, merely a sub-editor."

"Cheer up, young man! Promotion awaits you. After dinner you shall be editor-in-chief."—Sarnia Observer.

THEN THE FUN BEGAN!

"Lady, you'll have to pay half-fare for that boy."

"But, conductor, he's only four years old."

"Well, he looks like a six-year-old."

"Sir, I've been married only four years."

"Lady, I'm not asking for a confession, I'm asking for a half-fare ticket."—The Sour Owl.

FOR HER COMING OUT PARTY

A woman made a purchase of some flowers from a small, itinerant, street peddler.

"Wonderful blossoms," she said. "I suppose you'll be here Wednesday, I'll want some more then, my daughter is coming out."

"She'll have the best in the market, mum," he replied. "What's she been in for?"

—Laughing Gas.

A girl met and old flame, and decided to high hat him.

"Sorry," she murmured, when the hostess introduced him to her, "I did not get the name."

"I know you didn't," replied the old flame, "but that is not your fault, you tried hard enough."

AN APT PUPIL

Policeman: "Miss, you were doing sixty miles an hour!"

She: "Oh, isn't that splendid! I only learnt to drive yesterday."—The Mueller Record.

Dub: "I'm going to marry a girl who can take a joke."

Kay: "Don't worry; that's the only kind of a girl you'll get."—The Dunham Magazine.

PAGING BERT

Boatman (to returning party): "Now, then, where's the punt pole?"

Clarence: "Yes, now I come to think of it there was a pole. Young Bert was using it. By the way, where is Bert?"—Opinion (London).

"Now," said the hypnotist, "I shall make this man forget everything."

"Hold on!" yelled a man in the back row, frantically, "He owes me a fiver."

POOR GEORGE!

"What shall I do? George has been under water for twenty minutes!"

"Let's go back to the hotel. I wouldn't wait that long for any man."—Tid-Bits.

Some men think they are breezy when they are only windy.

—L Y T

LIQUID SOAP FIXTURE

Latest design push-in type. Pressing of button delivers measured quantity of soap. At no position of button can soap run in steady stream. Nickel-Plated or Chromium finish. Send for catalog.

Imperial Brass Mfg. Co.
1231 West Harrison Street
Chicago, Illinois

4"x5" Oval Float

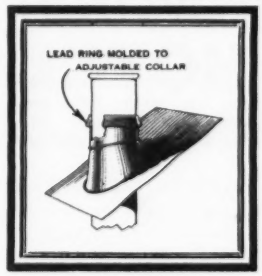
NO-SOL COPPER FLOATS

No-Sol Floats incorporate all features necessary to the satisfactory performance of a tank float.

5" Round Float

Each float is individually tested and guaranteed.

INCORPORATED 1907
The AYLING & REICHERT CO.
3047 N. Erie St. Toledo, Ohio



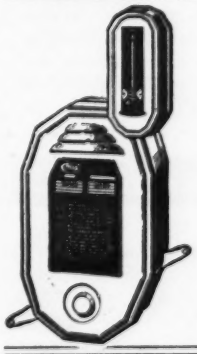
1½ in. to 6 in.

HESSLER
Adjustable
ROOF FLANGE

NO. 1 ¼ TO ½ PITCH
NO. 2 FLAT TO ¼ PITCH

Furnished in Galvanized or Copper

H. E. HESSLER CO., SYRACUSE, N. Y., U. S. A.



COOK
HEAT CONTROL

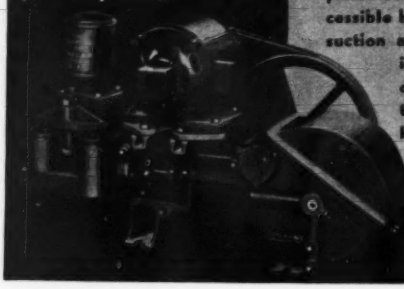
Automatically opens and closes the draft and check doors of hard fuel heating plants at the demands of a thermostat

QUICK TURNOVER
BIG PROFITS
DEPENDABLE PRODUCT

Write today for complete merchandising plan and prices

COOK ELECTRIC CO.
2700 Southport Ave. Chicago, Ill.
Controls for Heating—Ventilating—Air Conditioning

DEMING
"OIL-RITE"
SHALLOW WELL
pumping UNIT



COMPARE!

Helical cut gears, Timken roller bearings, stainless steel piston rod, suction valves accessible by removing one nut, suction and discharge openings on end of pump, capacities from 550 to 4800 gallons per hour.

THE DEMING CO.
Est. 1880
Salem, Ohio

Sell Customer Satisfaction
... and profit is assured

You can safely recommend an OHIO... There's a model to fit every job.
Write for dealer proposition.

OHIO
Automatic
WATER HEATER

Manufactured by THE OHIO HEATER CO., *Columbus, Ohio*

20% *Reduction in* HOTEL RATES

Hotel Savery
Des Moines, Iowa

Hotel Fort Des Moines
Des Moines, Iowa

Hotel Blackhawk - Davenport, Iowa

BLACK HAWK HOTELS in Iowa and Minnesota lead the way in value giving. Rooms in all SEVEN of the famous Black Hawk Hotels reduced 20%.

Food rates in our excellent, comfortable coffee shops and dining rooms reduced accordingly.

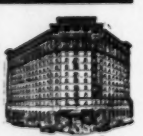
NEXT TIME you travel in Iowa or Minnesota try a Black Hawk Hotel for comfort, convenience and savings. Our reductions mean lower traveling costs for you! Minimum rates at our hotels now range from $1.50 and $2.50 and we have PLENTY of minimum rate rooms to offer. Extra guest only $1.00.

BLACK HAWK HOTELS

Hotel Mississippi
Davenport, Iowa

Hotel Davenport
Davenport, Iowa

Hotel Hanford
Mason City, Iowa



Hotel Saint Paul
St. Paul, Minn.

SENTENCES THAT SELL

Write one of these BLACK BOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

Wealth and happiness are not always on the best of terms.

* * *

The only thing that beats a good wife is a bad husband.

* * *

Ignorance is bliss until it begins to associate with egotism.

* * *

Good temper is like sunshine; it sheds brightness over everything.

* * *

All things might come to the man who waits, if starvation did not get there first.

* * *

One way to judge a man's character is by what he doesn't say.

* * *

The man who lacks faith in his own ability seldom accomplishes anything.

* * *

The wise man knows how little he knows of what may be known.

* * *

It is not disgraceful to tumble to your own faults.

* * *

If you trust to luck for anything you will be lucky if you get it.

* * *

Bright hope is often exchanged for gloomy experience.

* * *

The most lonesome fellow is the one who is stuck on himself.

* * *

Sometimes it is well to think twice and then keep silence.

* * *

Never cast aside old friends for new.

* * *

It is not necessary to use a net to catch a flying rumor.

* * *

Cheap wedding rings often seem to get the best results.

* * *

Black ravens are brave, they never show the white feather.

* * *

Diplomacy is tact, or the art of getting out of tight places.

* * *

Experience is like a light hung at the stern of a ship.

* * *

The man who goes to sleep holding a steering wheel is in danger of holding a harp when he wakes up.

* * *

Many a man doesn't fail because he doesn't try.

* * *

It is better to work for a living than to live without working.

* * *

It is a good policy to leave a few things unsaid.

* * *

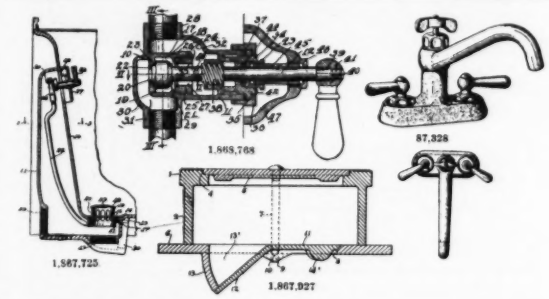
Some people think that opportunity means a chance to make money without earning it.

NEW IDEAS FROM PATENT OFFICE

Plumbing Department

1,867,725. Bathtub Drain. Frank G. Brotz, Kohler, Wis., assignor to Kohler Company, Kohler, Wis., a corporation of Wisconsin.

1,868,768. Diverter Valve. William Schneider, Erie, Pa., assignor to Hays Manufacturing Co., Erie, Pa., a corporation of Pennsylvania.



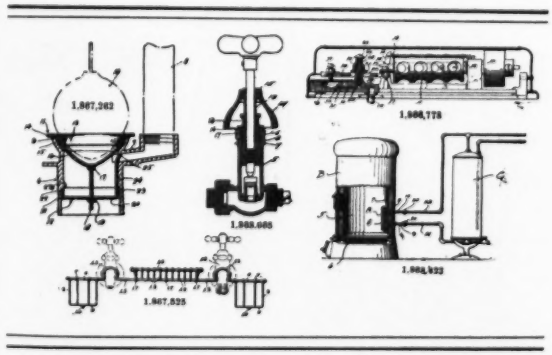
1,867,927. Sewer Drain. John E. Simpson, Portsmouth, Ohio.

87,328. The Ornamental Design for a Faucet. Frank G. Brotz, Kohler, Wis.

1,867,262. Flush Tank Valve Seat. James B. Howle, Richmond, Va.

1,868,665. Plumbing Fixture Adapter. Frederick C. Kuhnle, Chicago, Ill.

1,866,778. Hygrostat. Morton O. Snediker, Chicago, Ill., assignor to The Powers Regulator Company, Chicago, Ill., a corporation of Illinois.



1,867,525. Attachment for Faucets. Napoleon B. Piersall, Newark, N. J.

1,868,423. Hot Water Heater. John F. Mayerhofer, Brooklyn, N. Y.

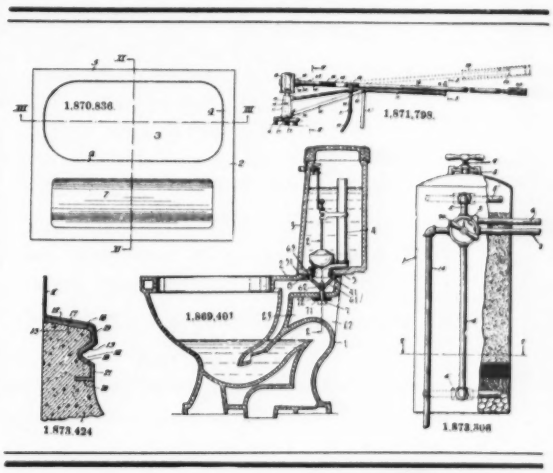
1,870,836. Bathtub. John C. Cromwell, Columbus, Ohio, assignor to The Steel Sanitary Company, Alliance, Ohio, a corporation of Ohio.

1,871,798. Sectional Sanitary Pipe Cleaner. Sereno F. King, Southbury, Conn., assignor to King Sanitary Pipe Cleaner Company, Sandy Hook, Conn., a corporation of Connecticut.

1,873,424. Shower Bath Construction. Paul W. Kerr and Arthur E. Jones, Elkhart, Ind., assignors to Henry Weis Manufacturing Company, Inc., Elkhart, Ind., a corporation of Indiana.

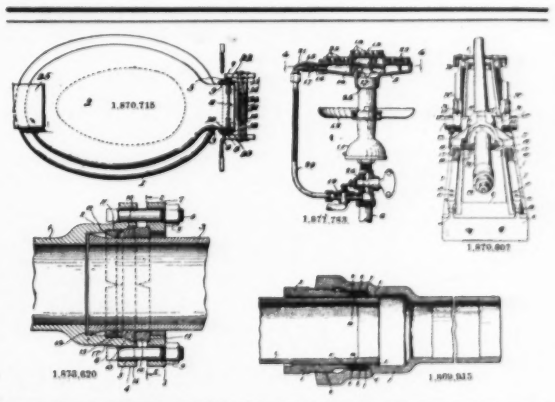
1,869,401. Combination Closet Bowl and Tank Structure. Carl H. Zwermann, Robinson, Ill.

1,873,306. Water Softening Apparatus and Multiway Valve for same. Edward J. De Ville, Dayton, Ohio, assignor to The Permutit Company, New York, N. Y., a corporation of Delaware.



1,870,715. Methods of Assembling and Hinging Toilet Seats and Covers. Edward L. Delany, Brooklyn, N. Y.

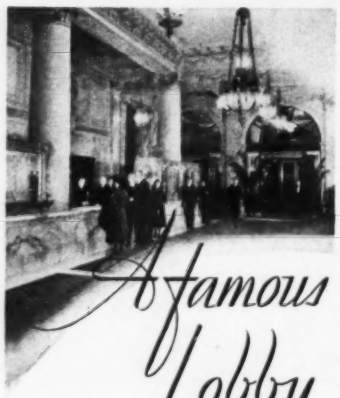
1,871,783. Dual Gas Burner. Arthur Friedman, Cleveland, Ohio, assignor to The Cleveland Heater Company, Cleveland, Ohio, a corporation of Ohio.



1,870,607. Pipe Pushing Jack. Charles A. Crane, Jr., Chicago, Ill., assignor to Templeton, Kenly & Co., Limited, Chicago, Ill., a corporation of Illinois.

1,873,620. Pipe Joint. James W. Moore, Birmingham, Ala., assignor to American Cast Iron Pipe Company, Birmingham, Ala., a corporation of Georgia.

1,869,915. Pipe Joint. James D. Sample, Birmingham,



A famous Lobby

ITS register reads like a "Who's Who" of world leaders in commerce, finance, diplomacy, the arts, and social life. The last eight Presidents of the United States have always stopped at the Bellevue-Stratford.

YOU will enjoy its fine hospitality and faultless efficiency—at rates that are quite consistent with present times.

BELLEVUE STRATFORD
PHILADELPHIA
CLAUDE H. BENNETT, Gen. Mgr.

DeWitt Operated Hotels
feature
Unusually Comfortable Rooms, the Finest of Foods
and
Rates Starting at $2.50 Single

DeWitt Operated Hotels are Fine Hotels, Located in the Heart of their Respective Cities

In CLEVELAND Its
THE HOLLENDEN
ELMER HOGREN, MGR.
1050 Rooms, all with Bath
4-Station Radio Speaker in Every Room

In COLUMBUS Its
THE NEIL HOUSE
TOM A. SABREY, MGR.
650 Rooms, all with Bath

In AKRON Its
THE MAYFLOWER
C. J. FITZPATRICK, MGR.
450 Rooms, all with Bath
4-Station Radio Speaker in Every Room

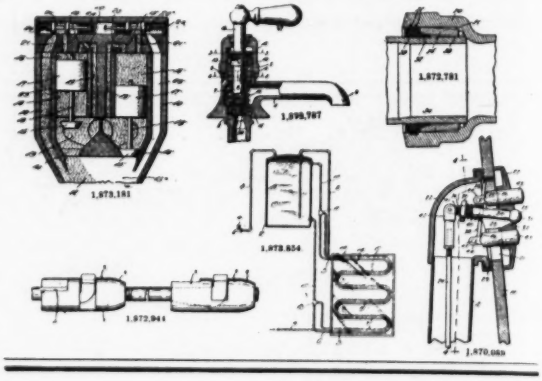
DeWITT OPERATED HOTELS

Ala., assignor to McWane Cast Iron Pipe Company, Birmingham, Ala., a Corporation of Alabama.

1,873,181. Closet Flushing Device. Charles Watkins Brown, San Diego, Calif.

1,872,787. Faucet. Robert H. Mueller and Chester B. Albert, Decatur, Ill., assignors to Mueller Co., Decatur, Ill., a corporation of Illinois.

1,872,781. Bell and Spigot Joint. James R. McWane,



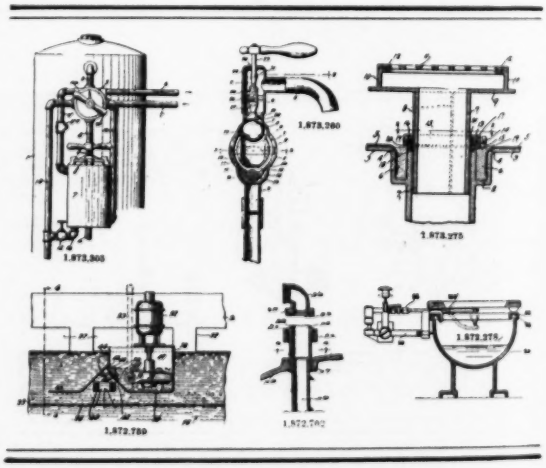
Birmingham, Ala., assignor to McWane Cast Iron Pipe Company, Birmingham, Ala., a corporation of Alabama.

1,872,944. Sewer Rod. John Gregory Heaney, Oakland, Calif.

1,873,854. Solar Water Heating System. Henry A. Wheeler, West Palm Beach, Fla.

1,870,089. Waste Pipe Fitting. Leon Bloch, Cleveland Heights, Ohio.

1,873,305. Water Softening Apparatus. Edward J.



De Ville, Dayton, Ohio, assignor to The Permutit Company, New York, N. Y., a corporation of Delaware.

1,873,260. Valve. John O. Barce, Chicago, Ill.

1,873,275. Drainage Fitting. Edward W. N. Boosey, Detroit, Mich.

1,872,759. Cleaning Device for Sewage Filter Beds. William C. Laughlin, Kew Gardens, and Abraham B. Asch, Brooklyn, N. Y., assignors to Filtration Equipment Corporation, New York, N. Y., a corporation of Delaware.

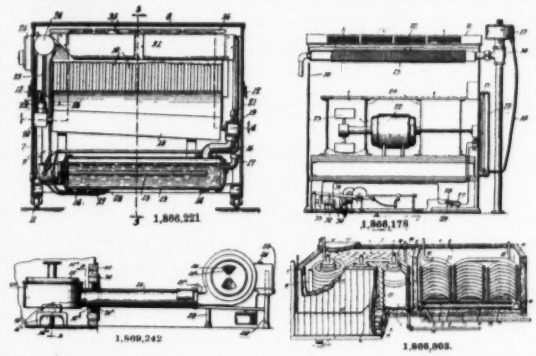
1,872,702. Range Boiler Coupling. Lester A. Dunck-lee, Lockport, N. Y., assignor to Jefferson Union Company, Lexington, Mass., a corporation of Massachusetts.

1,872, 278. Flushing Arm for Sanitary Water Closet Attachments. Ferruccio Guidetti, Elmhurst, and Guiseppe Bontempi, New York, N. Y., assignors to The Watairway Manufacturing Corporation, New York, N. Y., a corporation of New York.

Heating Department

1,866,221. Electric Steam Radiator. Harold C. Pennington, East Orange, N. J., assignor to Joseph B. Grison, New York, N. Y., and Charles R. Morton, Summit, N. J.

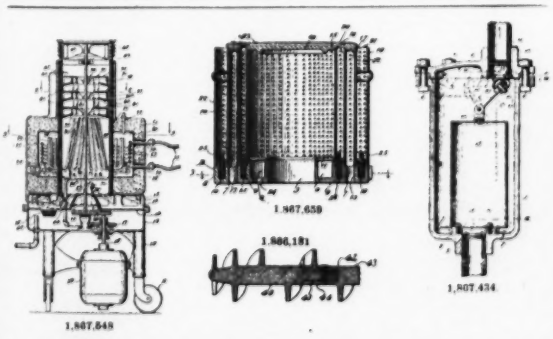
1,866,178. Heating and Ventilating Apparatus. Morton O. Snediker, Chicago, Ill., assignor to The Powers Regulator Company, Chicago, Ill., a corporation of Illinois.



1,869,242. Oil Burner Construction. Augustus J. Frame, Columbus, Ohio, assignor to Franklin Oil Heating, Inc., Columbus, Ohio, a corporation of Ohio.

1,866,803. Heating and Cooling Apparatus. Frederick E. Hartmann, Omaha, Nebr., assignor to Baker Ice Machine Co., Inc., Omaha, Nebr., a corporation of Nebraska.

1,867,548. Apparatus for Conditioning Air. William J. Brocker, Tampa, Fla.



1,867,659. Oil Burner. Homer D. Dufault, Easthampton, Mass., assignor of two-tenths to Alderic Rugere, two-tenths to Euclide Fugere, two-tenths to Adam Boucher, one-tenth to Henry Bernier, and one-tenth to Hiram Bernier, Easthampton, Mass.

1,866,181. Stoker Construction. Edwin Archer Tur-

Guests from Afar.
Particular people from all over the world make Detroit-Leland their home in Detroit. The luxury and magnificence of this famous hotel are yours at ordinary hotel cost.
HOTEL
DETROIT-LELAND
800 ROOMS
WITH BATH
SINGLE.. $2.50 AND UP
DOUBLE.. $3.50 AND UP
Electrically cooled air in Dining Room & Coffee Shop
CASS AND BAGLEY
DETROIT
NOW BAKER OPERATED
The hospitality that has made the Baker name famous everywhere is yours at the Detroit-Leland

Coming to Chicago?
Chicago's most interesting hotel offers you unequalled luxury at low rates. In the heart of Chicago's Rialto with its brilliant night life-close to stores, offices and railroad stations.
UNEQUALLED CONVENIENT LOCATION
and
YOU CAN DRIVE YOUR CAR RIGHT INTO HOTEL SHERMAN GARAGE
1700 ROOMS
1700 BATHS
FROM $3.
HOTEL
SHERMAN
HOME OF THE COLLEGE INN
CHICAGO'S BRIGHTEST SPOT

DISTINCTION Guests at the William Penn enjoy the prestige of a good address. From coast to coast it is known as a hotel of distinction, possessing an atmosphere appreciated by experienced travelers. Yet rates are reasonable. William Penn Restaurants serve only the highest quality of food at moderate prices.

An Attractive ROOM and BATH for $3.50

HOTEL WILLIAM PENN
PITTSBURGH
1600 ROOMS . . . 1600 BATHS

The Largest and Finest Hotel in Kentucky

Homelike Comfort and Good Food at Reasonable Rates

1000 Rooms with Bath
Rates
Starting at $3.00 Single

Fourth and Broadway

THE BROWN HOTEL
LOUISVILLE
KENTUCKY

HAROLD E. HARTER
Manager

Popular Priced Coffee Shop with Rapid Counter and Table Service

For Your Car - THE BROWN GARAGE - Hotel Operated

The HOME *of* KENTUCKY HOSPITALITY

HOTEL LENOX

New Low Rates

for the finest, most comfortable accommodations in town. Excellent food. Convenient location. 3 minutes from Peace Bridge to Canada. 20 miles from Niagara Falls.

Free—Official AAA Road Map and Booklet. Write

CLARENCE A. MINER, PRES.
140 North St., near Delaware

BUFFALO, N. Y.

The Breakers

ON THE BOARDWALK

Atlantic City, N. J.

Features New Low Rates for Boardwalk Hotel Accommodations

PER DAY $5 PER PERSON

With Meals and Private Bath

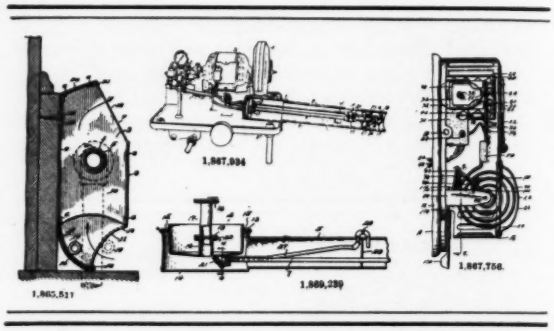
HOT AND COLD SEA WATER
EXCELLENT CUISINE ∴ GARAGE ATTACHED
IDEAL CONVENTION FACILITIES

ner, New York, N. Y., assignor to The Standard Stoker Company, Incorporated, a corporation of Delaware.

1,867,434. Steam Trap. Carl W. Zies, Lakewood, Ohio, assignor to The V. D. Anderson Company, Cleveland, Ohio, a corporation of Ohio.

1,865,511. Radiator. Robinson V. Frost, Norristown, Pa., assignor to Frost Research Laboratory, Inc., a corporation of Pennsylvania.

1,867,934. Oil Burner. Bernard B. Zahner, Kansas City, Mo.



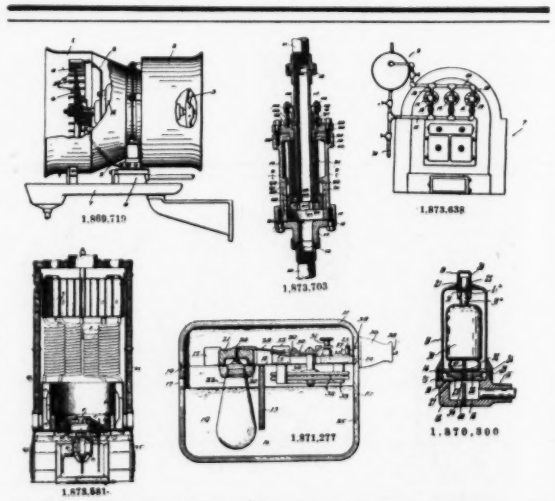
1,869,239. Oil Burning Apparatus. Harold B. Donley, Augustus J. Frame, and Jacksen G. Gilmore, Columbus, Ohio, assignors to Franklin Oil Heating, Incorporated, Columbus, Ohio, a corporation of Ohio.

1,867,756. Room Thermostat. Albert Penn, Des Moines, Iowa, assignor to Penn Electric Switch Co., Des Moines, Iowa, a corporation of Iowa.

1,869,719. Humidifier. Edw. Southworth, Portland, Me.

1,873,703. Expansion Joint. Jean V. Giesler, Knoxville, Tenn., assignor to The Fulton Sylphon Company, Knoxville, Tenn., a corporation of Delaware.

1,873,638. Water Heater Boiler Attachment. Selig Epstein and Charles Epstein, New York, N. Y.



1,873,581. Oil Burning Apparatus. Morgan J. Hammers, Stamford, Conn., assignor to Petroleum Heat and Power Company, New York, N. Y.

1,870,300. Radiator Valve. Christopher G. Thibodeau, Arlington, Mass., assignor of one-half to Frank W. Zinn, Boston, Mass.

1,871,277. Humidifier. Louis F. Perkett, Traverse City, Mich.

CLASSIFIED ADVERTISING

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion. One inch $4.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

Situations Open

MANUFACTURER OF OUTSTANDING reputation with line of fast-selling plumbing fixtures, selling direct to the plumber, looking for representatives. Give full information on present connections. New selling conditions present unlimited selling possibilities with this line. Write at once. Address Key 797, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

TWO SALESMEN WANTED FOR NEW England territories. Specialty men preferred. Commission basis. State previous experiences and references. Address Key 787, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Situations Wanted

WANTED—POSITION WITH WHOLEsale house in office or with firm as assistant estimator. Forty-six years of age with thirty years of experience in plumbing and heating. Have been foreman and estimator for last fifteen years in one shop. References. Address Key 788, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Lines to Handle

SALESMEN PRESENTLY CALLING on plumbing and heating contractors to handle complete line of quality iron pipe fittings. Protected territory and extremely liberal commission to men who qualify. Advise exact territory covered and full details regarding yourself. Address Key 785, "Domestic Engineering," 1900 Prairie Avenue, Chicago, Illinois.

PROMINENT DETROIT MANUFACturer wishes manufacturers' agents to handle their line in the following localities: Boston, Milwaukee, Denver, San Francisco, Pittsburgh, Cincinnati—complete plumbing and heating line. Forty years in business—changing method of distribution. Address Key 784, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED—MEN FROM ALL LARGE cities to take on either as a side line or exclusive, very good line of patented sewer cleaning devices. Address Fritz Manufacturing Company, 1511 Diversey Parkway, Chicago.

Lines Wanted

SALES EXECUTIVE, 20 YEARS' EXperience, enjoying wide acquaintance plumbing supply houses Metropolitan New York, wishes to represent one or several manufacturers. Address Key 778, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

MANUFACTURERS' AGENT CALLING on large retail plumbing and heating accounts desires complete line of concrete inserts, radiator brackets, pipe hangers, etc. References and bond furnished. Address Key 779, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

MANUFACTURER OF WELL KNOWN plumbing line wishes to take on and market an additional line. New products preferred. Address Key 789, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

SALESMAN WITH LONG EXPERIence in plumbing field would like to represent one or two substantial manufacturers in Greater New York on commission basis. Address Key 786, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

Representatives Wanted

SALES REPRESENTATIVES
BRANCH MANAGERS
SALESMEN

who are thoroughly experienced in the sale of steam and hot water heating equipment, who have outstanding sales records and who are interested at this time in a lucrative sales opportunity such as does not usually exist, should write for further information. Give full particulars concerning experience, past connections and sales. Present members of organization are aware of this ad and all inquiries will be treated confidentially. Address P. O. Box 1222, Pittsburgh, Pa.

DISTRICT SALES REPRESENTATIVE. Several desirable territories now open to represent well-known line of Electric Pumps and Water Systems. Only high type salesmen need apply. References required. Write at once to Key 772, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

REPRESENTATIVES WANTED BY manufacturer of high grade heating appliances—copper radiators, water heaters, humidifiers, electric radiators, on liberal commission basis, in important cities west of the Mississippi acquainted with heating and plumbing trade, architects and engineers. Address Key 790, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED — REPRESENTATIVES BY eastern manufacturer of copper radiators and heating appliances on liberal commission basis in Indiana, Ohio, Michigan, Wisconsin and Southern states acquainted with the heating and plumbing trade, architects, engineers. Address Key 791, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED—REPRESENTATIVES TO SELL THE TRADE

A high grade line of plumbing fixtures direct from manufacturer to plumber. Well known, established for forty years with same selling policy. An unusual opportunity for the right men to capitalize on present conditions in the plumbing industry. In answering this advertisement give information on lines handled and territory covered, past experience, etc. Address Key 792, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

WANTED — MANUFACTURERS' REPresentative to handle old established line of plumbers' tubular brass goods in Texas, Louisiana, Mississippi—to jobbing trade only. Full detail in first letter. Address Key 776, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

For Sale

TO SETTLE ESTATE BUSINESS property, plumbing supplies and tools can be bought for $5,000 over incumbrances. Inquire of Gregg & Feuchs, Attorneys for Estate, Port Jervis, N. Y.

FOR SALE

Two second hand No. 320 down draft smokeless type Kewanee Fire Box heating boilers. 150 H.P. low pressure. In fine condition. Can offer at a bargain. All complete and acceptable to the Hartford Steam Boiler Inspection & Insurance Co. TITUSVILLE IRON WORKS COMPANY, 20 North Wacker Drive, Chicago.

Miscellaneous

PLUMBERS!

Build Your Own Water Softener

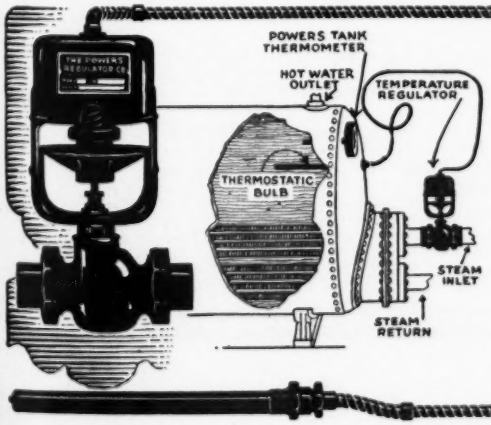
10,000 grain capacity.....$29.50
20,000 grain capacity.....$43.50

We furnish tank, mineral, screen, distributor screen, valves, testing outfit, paint and assembly blueprint. You assemble and set your own retail price. Write for details. THE ROCKFORD WATER SOFTENER CO., Rockford, Ill.

AUDEL'S PLUMBERS' GUIDE

The standard educator; teaches the theory and practice of plumbing, heating, steamfitting, gasfitting and sheet metal work. Answers your questions. Explains the new short cuts, modern methods and inside trade information. Easy to understand. A complete reference and home study course. Fully illustrated, authentic, up-to-date, with plumbers code. Four volumes, pocket size; price $6 complete, payable $1 a month. Write today for FREE Plumbers Folder. THEO. AUDEL & CO., 65 W. 23rd St., New York.

WE MAKE A SPECIALTY OF JOB Tickets, Time Sheets, Letter Heads, Envelopes, etc., for Plumbing Contractors. Prices include delivery to Eastern Points. Samples mailed. Address Louis Fink & Sons, School Building, Laurel Springs, New Jersey.



$135. Invested in Powers Control Saves $1,145. a Year

Metered steam records of Aldis & Co., who own and operate many buildings in Chicago, showed a reduction of 154,000 pounds of steam a month with Powers Temperature Control on hot water heaters in their Champlain Building.

Besides preventing steam wasted by OVER-heated water, complaints about hot water were practically eliminated.

As Powers Tank Regulators usually give 10 to 15 years of Dependable Control, the profit on a $100 investment is often more than $10,000.

Phone or write our nearest office for prices or engineering data

THE POWERS REGULATOR CO. Chicago: 2716 Greenview Ave. New York: 231 East 46th St.

Offices in 43 Cities — See your telephone directory

Index to Advertisers

October, 1932

Acheson Mfg. Co.....153
Air Reduction Sales Co.... 14
American Blower Corp. ... 26
American Brass Co..... 16
American Radiator Co.... 86
American Rubber Products Co. 132
American Sanitary Mfg. Co.163
Armstrong Bros. Tool Co...139
Automatic Gas-Steam Radiator Co. 109
Ayling & Reichert Co.....155

Barber Gas Burner Co., The 90
Barnes & Jones, Inc.....116
Bead Chain Mfg. Co.....143
Beaton & Cadwell Mfg. Co.140
Benson Co., Inc., Alex R...154
Bialosky Bros. & Co., The.109
Black Hawk Hotels.....156
Blake Specialty Co.....147
Burnham Boiler Corp..... 10
Butler Mfg. Co.....98
Byers Co., A. M..... 5

Capitol Brass Division of Bohn Aluminum & Brass Corp. 23
Chase Brass & Copper Co., Inc. .....Inside Back Cover
Cook Electric Co.....155
Crane Co. .....58 and 59

Dahlquist Mfg. Co.....144
Dart Mfg. Co., E. M.....154
Decatur Pump Co.....146
Deming Co., The.....156
Dole Valve Co. .....21 and 22
Douglas Co., The John.... 7
Duriron Co., Inc., The.....122

Excelso Products Corp..... 11

Fairbanks, Morse & Co.... .....18 and 19
Fretz-Moon Tube Co., Inc..150

General Electric Co.....112
Gerstein & Cooper Co.....138
Grabler Mfg. Co..... 15
Grinnell Co.....Back Cover

Hayes Mfg. Co.....153
Hays Mfg. Co.....121
Hessler Co., H. E.....155
Hindley Mfg. Co.....153
Hotel Bellevue Stratford..158
Hotel Breakers.....160
Hotel Brown 160
Hotel Detroit Leland.....159
Hotel Hollenden 158
Hotel Lenox 160
Hotel Mayflower 158
Hotel Sherman 159
Hotel William Penn.....160

Illinois Malleable Iron Co..150
Imperial Brass Mfg. Co....155
International Nickel Co....154

Jarecki Mfg. Co.....125
Johns-Manville 70
Jones & Laughlin Steel Corp. 9

Kainer & Co.....154
Kennedy Valve Mfg. Co.... 20
Kohler Company 127
Koven & Bro., Inc., L. O...131

Lavelle Rubber Co.....151
Leland Electric Co.....108
Leonard-Rooke Co. 136

Malleable Iron Fittings Co. 24
Marsh Corp., Jas. P.....134
McDonnell & Miller..... 92
Miller Co., Chas. A..... 61
Minneapolis Honeywell Regulator Co. 102
Moore Valve Corp., J. W...134
Morency-Van Buren Div., Scovill Mfg. Co..... 12
Motor Wheel Corp.....111
Mueller Co. 8
Muncie Gear Co.....107
Myers & Bro. Co., F. E....145

Nash Engineering Co.....164
National Pipe Bending Co.141
National Tube Co..... 79
Neil House 158
Norristown Magnesia & Asbestos Co. .....63 and 64

Ohio Heater Co., The.....156

Peck Bros. & Co., The..... 31
Penberthy Injector Co..... 55
Penna. Range Boiler Co...146
Perfex Corp. 136
Petroleum Heat & Power Co. 106
Phoenix Brass Fittings Corp. 133
Pittsburgh-Des Moines Steel Co. 104
Powers Regulator Co. 161

Radiator Specialty Co.....123
Raymond Co., F. I.....100
Reading Iron Co. 29
Red Jacket Mfg. Co.....133
Redlon, O. M.....151
Reichert Float & Mfg. Co..144
Revere Copper & Brass, Inc. 77
Robertshaw Thermostat Co. 103
Rome Radiation Co..... 76
Russell & Co., W. A..72 and 73

San-Equip, Inc. 149
Sarco Co., Inc.....135
Scovill Mfg. Co..... 57
Scovill Mfg. Co., Morency-Van Buren Div. 12
Silent Glow Oil Burner Corp. 82
Sloan Valve Co..... 68
Smooth-On Mfg. Co.....148
Spang, Chalfant & Co., Inc. 67
Speakman Co. ....Inside Front Cover
Spencer Heater Co...94 and 95
Standard Sanitary Mfg. Co. 13
Standard Tank & Seat Co.. 28

Taber Pump Co.....153
Teeple Co., L. R.....104
Thermoil Heaters, Inc.....110
Thrush & Co., H. A..... 17
Toledo Pipe Threading Machine Co. 32
Trenton Potteries Co..... 27
Trimont Mfg. Co.....118

Vacu-Draft Corp. 107
Vogel Co., Jos. A..... 3

Warnock Mfg. Co.....148
Warren Webster & Co.....117
Watts Regulator Co..... 75
Weil-McLain Co. 101
Weis Mfg. Co., Henry.....124
Westco Pump Corp.....119
Wise, Inc., J. B..... 25
Wolverine Brass Works...139
Worcester Brush & Scraper Co. 140

Youngstown Sheet & Tube Co. 6

No. 399A

Solid Cast Brass Body with Wrot Outlet Bend. Furnished with Cast Nuts and Sawtooth Flanges. Ground Joint Connection Between Trap Body and Outlet Bend.

American BRASS GOODS

AMERICAN N. P. Anti Syphon Cast Traps, like the entire line of American Brass Goods are unequalled for quality and finish and are used on installations where sanitation is the important feature.

The American Traps illustrated have met approval in those cities where the plumbing code requires anti syphon traps.

No. 397A and No. 399A are made in both 1¼" and 1½" size and in 20 and 17 gauge.

Write for the story of the entire line of American Brass Goods.

No. 397A

Solid Cast Brass Body with Wrot Outlet Bend. Furnished with Cast Nuts and Sawtooth Flanges. Ground Joint Connection Between Trap Body and Outlet Bend.

AMERICAN SANITARY MFG. CO.
ABINGDON ILL.

A Movie Set Looks Well Until You Get Behind It!

And so it is with the ratings of heating pumps. Take a heating pump rated for ten thousand square feet. That rating is the pump's "Front". It may be able to handle the air and water from ten thousand feet of radiation, and may not. After all, the rating of a pump is not very important. Then what is? The essential thing for you to know is: How much air and how much water that pump will handle in a minute, and at how great a power consumption. Any pump may handle the water it is rated for, at its rated power, and it may handle the air it is rated for, at its rated power, BUT NOT AT THE SAME TIME, or in a word, SIMULTANEOUSLY! Understand, a pump may even be able to handle both air and water simultaneously, BUT NOT ITS FULL RATED VOLUME OF EACH. The water volume of the pump may fall off as its air volume goes up, and vice versa. Make sure that the pump you buy will pump its full rated volume of air, and its full rated volume of water, DURING THE SAME MINUTE, or SIMULTANEOUSLY, and AT ITS RATED HORSE POWER. Do that, and you will buy a Jennings.

NASH ENGINEERING CO.
SOUTH NORWALK, CONN., U. S. A.

Jennings Pumps
SIMULTANEOUS CAPACITY